The OIL WEEKLY

THE BEST EQUIPPED PRODUCTION LINES IN AMERICA ARE CONTROLLED WITH NORDSTROM VALVES

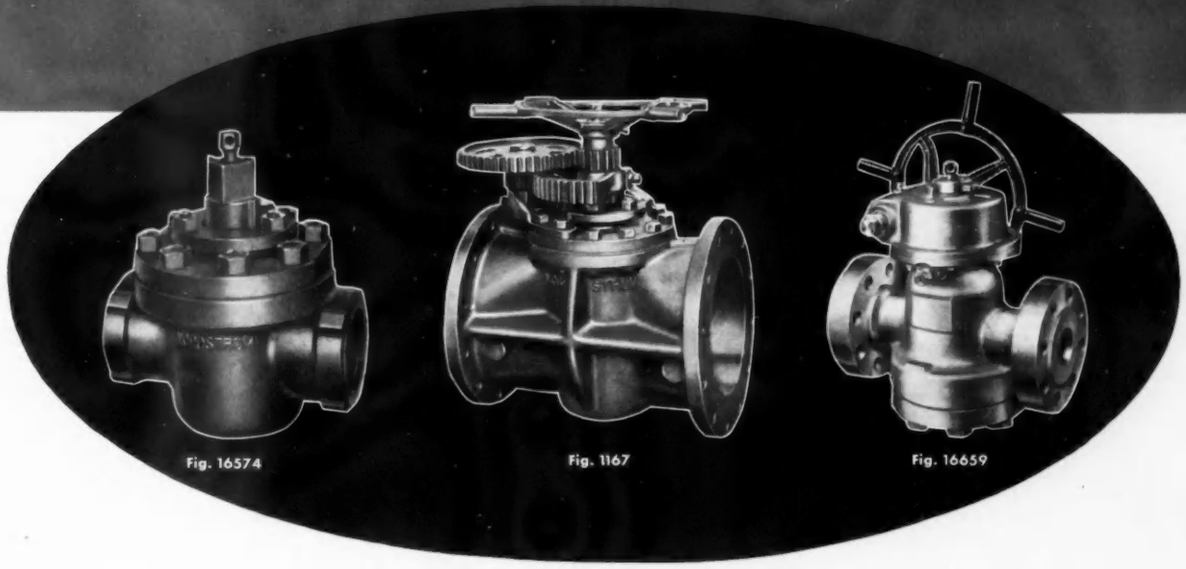

Fig. 16574 Fig. 1167 Fig. 16659

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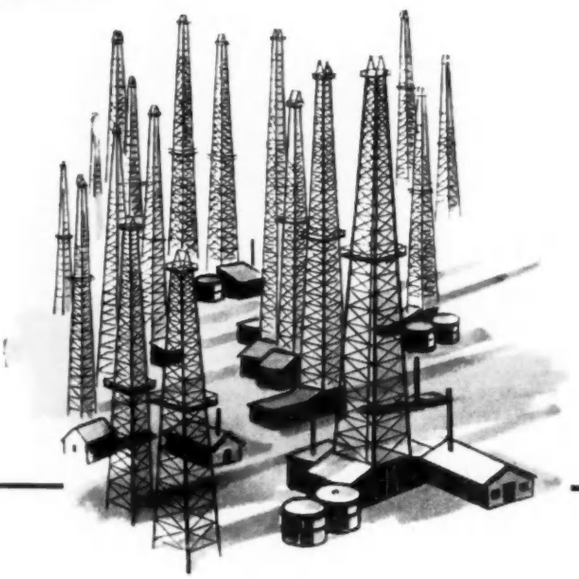

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LOOKING AHEAD

. . . with the Editor

MORE and more insistently it is being said: "We are not finding oil fast enough to keep daily productive capacity in pace with rapidly growing military needs." This immediately raises the question of how to stimulate prospecting efforts.

In the hope of helping to increase wildcatting and discovery rates, THE OIL WEEKLY of April 5 will be devoted to the problem of "War Exploration." It will present expressions from some of the industry's leaders as to the petroleum supply situation and needs if exploratory work is to be stimulated. In addition, there will be a poll of operators seeking to determine what stimulants will increase wildcatting.

The Oil Man's Calendar

APR. 7	Society of Exploration Geophysicists, Texas Hotel, Fort Worth, Texas.
7- 9	American Association of Petroleum Geologists, Texas Hotel, Fort Worth, Texas.
8- 9	American Petroleum Institute, Division of Production, Eastern District, Wm. Penn Hotel, Pittsburgh.
29-30	American Petroleum Institute, Division of Production, Southwestern District. Rice Hotel, Houston.
MAY 5- 6	Petroleum Electrical Association, Houston.
6- 8	American Institute of Mining and Metallurgical Engineers, Petroleum Division, Baker Hotel, Dallas, Texas.
20-21	A.P.I. Mid-Continent Section, Production Division, Tulsa.

THE OIL WEEKLY

ENGINEERING « NEWS » STATISTICS

Published by THE GULF PUBLISHING COMPANY, Houston, Texas

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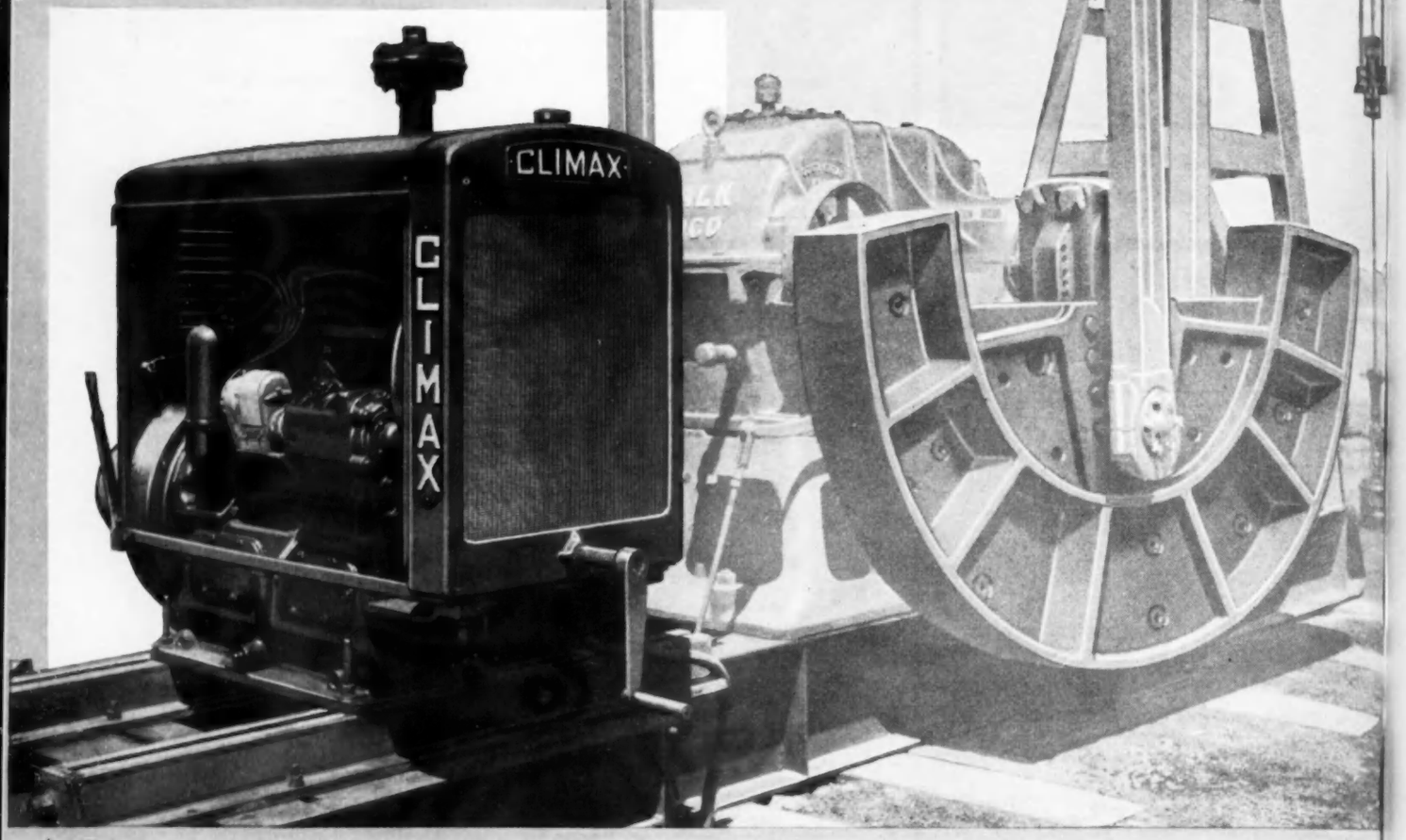

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The Changing Panorama

California May Get Drilling Green Light

STUDIES just completed by PAW have determined that 2100 proved locations for new wells are available for immediate drilling in California, and that with rehabilitation 1500 old wells now idle can be returned to production in heavy fields. While no figures are obtainable as to how much additional oil could be made available by drilling and rehabilitating this many wells, it is obvious that such a number would mean tens of thousands of barrels daily.

This information and other vitally important new data relating to California's potentialities for quickly developing a large volume of new production under reasonably favorable conditions are now before authorities at Washington. From responsible sources in Los Angeles, it is learned there are good grounds for hopes that action of a sweeping nature may be taken at Washington within the next week or so which will give a green light for an immediate start of a vast drilling program.

Independents Drill Most of Wildcats

SMALLER operators drilled three times as many wildcats and found twice the number of new oil fields than integrated companies did during 1942. These figures are obtained from a study of wildcat results in PAW's District 3 area, which accounts for 42 percent of all wildcat operations drilled during the year.

Of a total of 1307 wildcat wells drilled in 1942 in the six-state area of Texas, Louisiana, Arkansas, New Mexico, Mississippi and Alabama, the integrated units drilled 317 wells while the non-integrated firms were drilling 990. The majors found 45 oil fields while the independents opened 88 new reserves. The smaller companies led in all types of discoveries except distillate fields. On a ratio basis the integrated operators found 1 field in 5.1 wildcat completions, while the smaller operators were opening 1 field for every 9.3 wildcats drilled.

With an increasing tendency on the part of the non-integrated companies to sell their oil properties because of wartime conditions (see "Independents Are Selling Properties," page 9, THE OIL WEEKLY, March 22, 1943), their leadership in this important phase of the industry may show a sharp decrease in 1943. This would be decidedly unhealthy, coming at a time when increased rather than reduced discovery rates are desired.

The following table explains the 1942 wildcat figures in detail for the six-state area:

	NUMBER		PERCENT	
	Major Firms	Small Firms*	Major Firms	Small Firms
Dry Holes	255	884	22	78
Oil Fields	45	88	35	65
Gas Fields	9	16	36	64
Distillate Fields	8	2	80	20
All Fields	62	106	37	63
Total Wildcats .	317	990	24	76

* Including independent operators.

Of course, these figures do not reveal the financial assistance large companies give to small operators in drilling wildcats. Many test wells are drilled by independents where a substantial portion of the operating costs are put up by major firms. However, it is becoming increasingly difficult for independent operators to obtain financial backing.

May Relax Spacing Rules in North Texas

DUE to declining production rates in Oklahoma, some difficulty may be experienced in maintaining an adequate volume of oil to keep some of the enlarged pipe lines extending through the state toward the East Coast operating at capacity.

To assure a sufficient supply for these lines, it is possible that spacing regulations in North Texas may be relaxed. Any changes from the 40-acre spacing regulations provided for in Conservation M-68 probably would be along the lines of those granted in Illinois, where closer spacing is permitted according to depth of wells. This would influence many of the areas under development in North Texas, where depths are fairly shallow.

Helium Gas Output Rising Rapidly

AIMING at an output this year some 40 times the pre-war production of helium, the Bureau of Mines has shipped the first carload of the gas from its new and largest helium plant "somewhere in Texas" and is rushing work on four other plants under a program involving the expenditure of $16,000,000.

All the new plants are located in the "southwestern area" and presumably away from the original plant at Amarillo, Texas, built in 1929, but recently expanded to increase production by 500 percent. The plant just brought in, however, will have an even greater capacity, two of the remaining four will have about the same and the other two about half the capacity of the Amarillo plant. All will work on a continuous schedule.

Oil Develops Many Special War Products

THE OIL industry is playing an essential part in fighting the war not only by furnishing basic petroleum products but also by developing special products and taking over emergency responsibilities. These contributions of the industry were brought to general attention when the Esso Laboratories of Standard Oil Development Company received an E pennant.

The laboratories were described as having fought four major technical development campaigns for the nation: finding how to increase enormously the output of 100-octane gasoline—a problem conceded as technically impossible by the French; breaking the bottleneck in explosives production by developing a process for turning out unlimited quantities of toluol from petroleum; helping to build a new synthetic rubber industry, based mainly on petroleum; and becoming an emergency technical arm for the Army and Navy.

The pennant was awarded to the research, development, and engineering staffs of the company for work on secret weapons and on synthetic toluol and 100-octane gasoline. The work on secret weapons included the following:

A mechanical smoke generator (made of available materials) used for camouflaging vital installations, together with suitable oils;

Revolutionary redesigning of the portable flame thrower, with increased range and efficiency—now the best in the world;

Remarkable pioneer work with incendiary bombs—perhaps the most destructive of all munitions, and

Development of small chemical and smoke bombs, in cooperation with the Chemical Warfare Service, susbtitutes for critical materials having been found.

Oil Deliveries to East Should Exceed Pre-War Levels by Fall

Delivery rate from Southwestern States to increase 500,000 barrels daily. Gain will occur rapidly during next six months, indicating time almost at hand when higher production rates will be necessary

PETROLEUM deliveries into District 1 (the 17 Atlantic Seaboard states) are on the upgrade, and will increase to such an extent they should exceed prewar levels by next fall, when enlarged pipe line and barge facilities will be in operation. Thus the industry will have achieved a transportation miracle of providing substitute means sufficient to offset the loss of tankers. Because the East Coast is the nation's heaviest consuming domestic region and also the petroleum supply territory for military activities in the Atlantic area, the trend of deliveries to District 1 is the best possible index of future production and refining rates. Therefore, as repeatedly pointed out, improvements in overland shipping facilities that will take place during the next six months, presage higher production and refining rates.

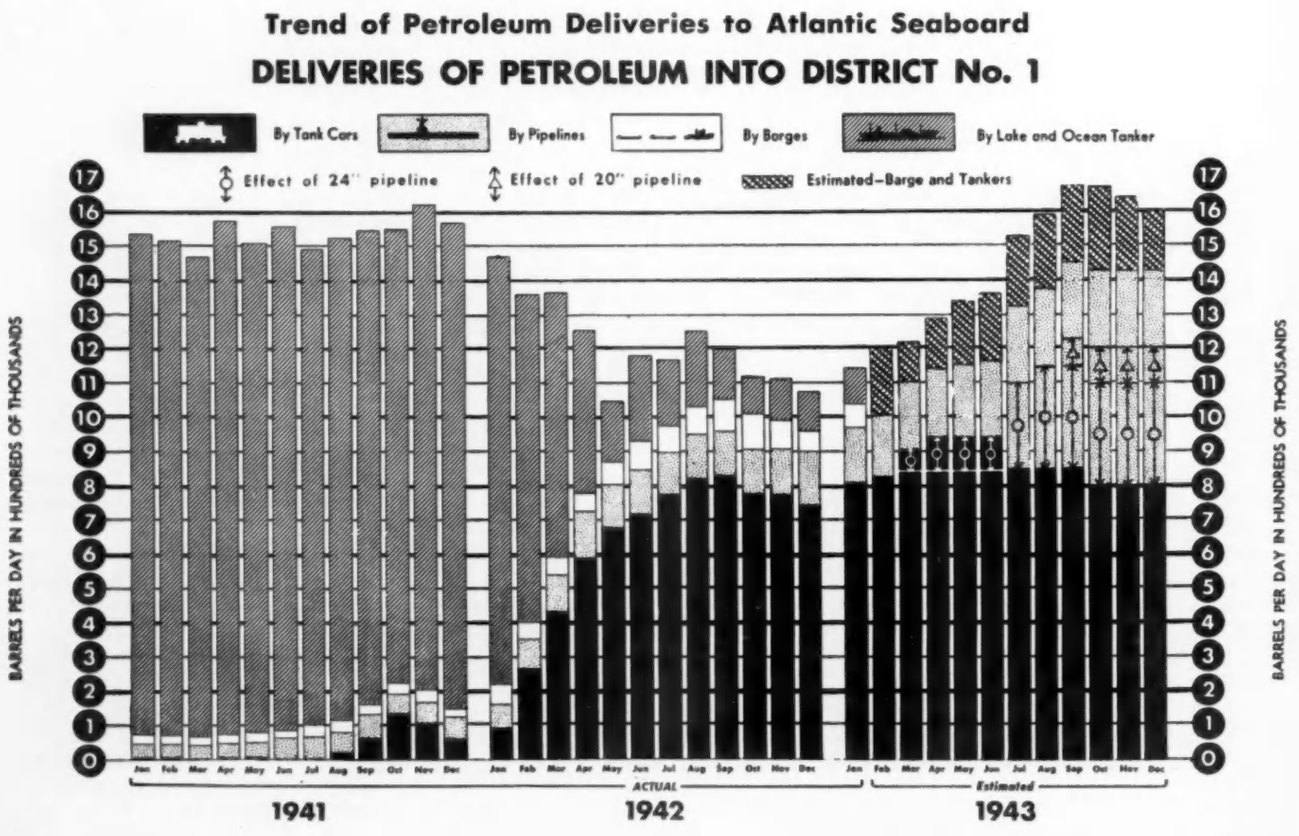
An accompanying chart, prepared by the PIWC Committee on Transportation, shows the trend of actual deliveries into District 1 during 1941 and 1942, and also the monthly volumes expected to be delivered during 1943. It vividly illustrates that the time has arrived when the Southwestern States, and principally Texas, will be called upon for greater production.

Trend of Deliveries

Shipments of petroleum into the Eastern area in 1941 were, in general, representative of prewar conditions, averaging 1,500,000 barrels daily and attaining a peak of 1,600,000 barrels in November. Practically all this volume was moved by tankers from the Gulf Coast. Deliveries in 1942 show the difficulties imposed by military drafting of tankers and also the transition from use of tankers to railroad cars. Shipments dropped to less than 1,050,000 barrels per day in May of 1942, and were but little better in the final months of the year, despite record movements by rail as the quantity moved by tanker dwindled to almost nothing.

Estimated increased deliveries in 1943 reflect the effect of completion of the 24-inch pipe to Philadelphia and New York and also the first section of the 20-inch products line from the Gulf Coast to Seymour, Indiana, as well as other enlarged facilities. By September

Trend of Petroleum Deliveries to Atlantic Seaboard


DELIVERIES OF PETROLEUM INTO DISTRICT No. 1
By Tank Cars
By Pipelines
By Barges
By Lake and Ocean Tanker
Effect of 24" pipeline
Effect of 20" pipeline
Estimated—Barge and Tankers
BARRELS PER DAY IN HUNDREDS OF THOUSANDS
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
ACTUAL
Estimated
1941
1942
1943

of 1943 the highest figure attained in 1941, over 1,600,000 barrels per day, will be topped. This will be 500,000 barrels more per day than in January, 1943. At the end of the year, tank cars are expected to account for the shipment of 800,000 barrels daily, pipe lines for 600,000 barrels per day, and tankers and barges for another 200,000 barrels daily.

Rise To Be Rapid

Deliveries to the East Coast during February and March were 50,000 barrels per day greater than in January of 1943, and in April should rise another 50,000 barrels. By May shipments should be 200,000 barrels per day higher than in January of this year. These increases will be due to enlarged pipe line facilities. The largest influence, of course, will be that of the big-inch system, the first leg of which (from Texas to Illinois) should be at full capacity during April. Enlarged barge and other pipeline movement also will help boost the total.

A big increase will take place in July and August, when the big-inch pipe line is scheduled to be operating all the way to the East Coast. Another increase of 200,000 barrels per day should take in July, which will raise Eastern deliveries to more than 1,500,000 barrels daily. Further gains, as the first leg of the 20-inch products line from Houston - Beaumont to Indiana goes into operation, will boost the total to almost 1,700,000 barrels per day by September and October.

Production Must Increase

These estimated increased deliveries are essential if a greatly expanded military demand for petroleum and rationed civilians are to be supplied. Consequently, crude production in Texas must be stepped up to fill the capacity of the new systems.

This has been repeatedly pointed out, but it is important to realize that time is fleeting and these increases must now take place during the next six months.

While there will be no increase in Texas production during April, although deliveries to the East Coast will be up 50,000 barrels, future gains in shipping rates will call for almost corresponding gains in crude oil production. The situation in April is explained by the fact that the additional capacity of the big-inch system will be satisfied by movement of refined products. Some of the lines being reversed between Houston-Beaumont refineries and Longview will be in operation, and will carry fuel oils to the 24-inch carrier. With Texas production maintained at the same level as in March, this will have the affect of transferring from the above-ground stocks that have accumulated on the Gulf Coast to the Eastern Seaboard. This will relieve Gulf Coast refineries of excess stocks, and improve their situation. However, this draft cannot be continued or Coastal stocks would be reduced below desireable levels.

The big-inch line will continue to operate partially on fuel oils, and the 20-inch line scheduled to be built from the Gulf Coast to Indiana will move refined products. These refined oils will be supplied in part by increased operations of Gulf Coast refineries, which will require additional crude oil production.

Most of the 500,000-barrel-per-day increase in deliveries to the East Coast expected by September must be supplied by greater crude oil production, either for the big-inch line or for greater refining activity in the Gulf Coast. These increases will nearly absorb Texas' ability to produce more oil. Despite the 50,000-barrel boost in Gulf Coast production during March and April, it is estimated by various sources that this region can still produce another 137,000 to 200,000 barrels, or perhaps more, per day than its current output. This will afford some time for rearrangement of transportation facilities to West Texas, so that the 200,000 to 250,000 barrels of available production capacity in that region can be tapped to make up the difference.

Does the Wily Jap Hope to Lull Synthetic Rubber Program?

By ROY E. LEIGH
Former Foreign Editor of The Oil Weekly

CASUAL observers are puzzled by current reports which suggest that increasing tonnage of natural crude rubber produced in the Far East is reaching this country as an end-product of continuing Russo-Japanese trade. Ships carrying lend-lease goods to Russia are said to be returning with cargoes of rubber, manganese, and other critical raw materials. Situations such as this are hard to assess during wartime, when facts, figures, and statistics concerning international trade are dimmed out by censorship; but, upon reflection, it is possible to explain this curious phenomenon of wartime economy, whereby Japan permits a vital necessity, such as rubber, to reach her most implacable enemy, the United States. Of course, the money received may be helping Japan finance the war, but other equally important reasons may underlie her willingness to sell rubber.

Japan is in the anomalous position of making war upon her best customer. Her industrial leaders already have had experience with the disastrous effect upon Japanese economy of the closing of the American market to one of their most important export commodities—silk. The development of synthetic fabrics in the United States may have done more than any other factor to ignite the long-smoldering embers of friction between Japan and the United States, and to prompt them to reach out for the conquest of another essential commodity, such as rubber, to take its place. The wily Japs know, by painful experience, what can happen when American technical ingenuity and manufacturing skill are brought into focus in the field of synthetics.

Being realists, they know that the war cannot go on forever; and, looking toward the resumption of trade with their richest customer, the Nipponese, even now, in the heat of battle, may be seeking to forestall the complete conversion of yet another great American industry from a crude to a synthetic raw materials basis. Such conversion would rob the Japanese of the fruits of victory in the East Indies.

To reach this conclusion, it is necessary, first, to assume that the Japs have come to realize that they cannot hope for total victory over the United States, and that the most they can expect is a negotiated peace which might leave them in possession of the rubber-producing islands of the Pacific. It may be their hope that we will fall into a cunningly-baited Oriental trap, since we need every ounce of rubber we can get, from whatever source.

We should not lose sight of the fact that this round-about movement of rubber is permitted on Japanese sufferance, and that the trap can be sprung at any time which might seem propitious to our enemies. The worst that could happen is that thus we might be lulled into a slackening of our efforts for the development of synthetic rubber, leaving us still vulnerable to Japanese action at any moment they close to cut off this supply of natural rubber. It is, in this respect, unfortunate that our great rubber industry is founded on processes using tree rubber, for which reason our rubber manufacturers might be tempted to cling to old methods, in which so many millions of dollars are tied up in vested rights, such as patents, processes and plantations.

Oil Industry Earnings Off About One Third in 1942

Thirteen out of 25 companies earn less than annual average for 1936-1939, aimed at by OPA in determining ceiling prices on oils

By L. J. LOGAN, Associate Editor

IN REFLECTION of increased taxes, higher operating costs, restrictions on sales of products, necessity of setting aside special reserves for wartime contingencies, and other extraordinary costs and charges, the oil industry experienced a substantial curtailment of earning power in 1942. Net income in 1942 was down almost one third from that in 1941, it is indicated by officially reported results of 25 oil-producing, refining, and pipe-line companies, which represent a good cross section of the industry, including large to small concerns and companies operating in all sections of the country. (See accompanying table.)

In 1942 these 25 companies had an aggregate net profit 29.2 percent less than in 1941, although 6 in the group showed increased net income. The latter included several strictly producing companies and two pipe-line companies of the East Coast district, which handled increased volumes of oil in connection with the extraordinary overland shipments to the Atlantic Seaboard.

OPA Position

It is significant that the curtailment of earnings in 1942 was closely in line with views of the Office of Price Administration regarding the effect of price ceilings on profits. OPA has closely examined past earnings of industries, and has pursued a policy of considering prices received by an industry as adequate in the event that they result in profits equaling the annual average for the four years, 1936-1939. In that connection, the price agency has declined to increase prices at points where increases would result in so-called "excessive" earnings, and feels justified in reducing any prices which would have such effect.

For the 25 oil companies here considered, the aggregate net profit was $103,159,669 in 1942, but down 29.2 percent from the $145,762,015 reported for 1941, but practically the same as the average annual profits of the 25 concerns for the four years 1936-1939. For the section of the industry represented by the 25 companies, as a whole, therefore, the results almost exactly conformed with the OPA ideas.

It is likely, however, that for the whole industry, profits for 1942 will show more than a 29-percent decrease from 1941, and that the 1936-1939 average will not be quite equaled. This is because reports have not yet been made on 1942 earnings by most of the larger companies, which very likely will not show as good results, in the aggregate, as did the 25 companies here treated. The larger companies operating in the East Coast district were especially affected by the difficulties in supplying that region, their earning power having been materially restricted thereby.

Vary Widely

Even for the 25 companies here considered, adherence to 1936-1939 earnings was only an adherence in the aggregate or on the average. Individual companies had earnings for 1942 that varied widely from their average earnings in 1936-1939, and for the substantial number that failed to equal the base-period average, there was no great comfort in the fact that better experience of competitors made results for the 25 companies in the aggregate as good as in the four-year period.

Actually, out of the 25 companies, 13 or over half the total earned less in 1942 than they individually earned per year, on the average, in 1936-1939. Eight companies earned from 25 to 60 percent less than in the base period.

In contrast with the results of these companies, 12 concerns did better in 1942 than they had done in 1936-1939, the increases over the base period having been under 50 percent in all but two cases.

While 3 solely producing companies (Plymouth Oil Company, Superior Oil Corporation, and Texas Gulf Producing Company) reported larger net income in 1942 than in 1941, other strictly producing concerns and diversified companies laying heavy emphasis on production, had similar experience, having reported smaller than average declines in profit. Among this latter group were, for example, Houston Oil Company, Lion Oil Refining Company, Navarro Oil Company, The Pure Oil Company, Sunray Oil Corporation, Union Oil Company of California. Also showing less than average curtailment of earnings were Quaker State Oil Refining Corporation, which had the advantage of good demand for the lubricants in which it specializes, and Standard Oil Company of Ohio, which fared better than some other large companies because of operating in the Middle West, where consumption was not greatly curtailed and where transportation problems were less serious than in other districts.

Producers Fare Better

The relatively good showing of the companies with larger than average participation in production of crude was based on the facts that production was well maintained in 1942, while average prices received were better than in 1941, and operating expenditures were smaller due to reduced drilling operations. United States production of crude in 1942 totaled 1,385,479,000 barrels, or only 1.3 percent less than the 1,404,182,000 barrels of 1941. The 19,000,000-barrel decrease was accounted for by Texas, New Mexico, Illinois and Oklahoma, practically all other states having produced as much in 1942 as in the preceding year if not more. Results of individual producers reflected these changes. The average price of crude oil was up to approximately $1.17 per barrel in 1942, compared with $1.14 in 1942, a 2.6 percent improvement, in reflection of the increases in the spring of

1941. Meanwhile, drilling declined 33.5 percent, there being 21,412 wells completed in contrast with 32,210 in 1941. Consequently, normal expenditures for drilling were down, although not one third because of higher wages, slower drilling time with inexperienced crews and other factors. Nevertheless, reduced expenditures for drilling probably were a substantial portion of the improved earnings shown by producing companies.

While the above 25 companies together showed a decrease of 29.2 percent in profit, for 1942 compared with 1941, the decline may be larger than that for the industry as a whole, as pointed out previously, inasmuch as the larger companies with heavy interest in East Coast refining and marketing and in foreign operations are not well represented in the tabulation, and they fared relatively worse than average. Those companies were confronted with restrictions on sales of their products, because of the transportation shortage, and were obliged to do various things that added materially to their operating costs. They eventually were compensated, through higher prices, for the extra costs of substituting more expensive transportation for tanker shipments and for buying higher priced oils at nearest possible sources. But compensation was not provided for the higher costs involved in producing increased quantities of lower-priced fuel oils by reducing yields of the better priced gasoline, and the altered refinery yields accounted in substantial measure for the sharp declines in earnings that some of the larger companies experienced in 1942.

The average refinery yield of gasoline was down to 37.2 percent in December, 1942, against 45.7 percent in December, 1941, a decrease of 18 percent in the amount of gasoline recovered from the barrel of crude. Meanwhile, the yield of gas oil and distillate fuel was increased to 16 percent from 13.7 percent, and the yield of residual fuel oil to 28.1 percent from 24.9.

East Coast

The Atlantic Refining Company's experience was the outstanding example of the adverse effects of the wartime conditions of 1942. Being primarily a refiner-marketer of the East Coast area, that company earned 52.6 percent less in 1942 than in 1941. Sun Oil Company, similarly situated, showed a decrease of 47.5 percent in earnings. The Texas Company's profits were down 32.4 percent, that concern being a wider-scale operator. Operating in the Middle West, Phillips Petroleum Company showed a decline of 24.7 percent in net income; and Standard Oil Company of Kentucky recorded a 27 percent decrease.

To some extent, decline in sales of petroleum products for civilian use, under rationing, are being compensated by increasing sales for military purposes, although increased sales for war production purposes have largely involved fuel oils, with the above-mentioned adverse effect on profits. For the strictly military purposes, the industry is furnishing aviation gasoline, toluol for explosives, and it is beginning to supply butadiene for synthetic rubber. In addition, the industry is supplying high-grade lubricants, aviation lubricants, special greases, and many miscellaneous products. While these wartime sales were of considerable importance in 1942, they will be even more important in 1943.

For the present year, the outlook for oil-company earnings is considerably clouded, mainly by the uncertainties concerning possible curtailment of petroleum consumption. It was forecast at the beginning of this year that demand for petroleum would be 5 to 10 percent greater in 1943 than in 1942. But already there has been subsequent tightening of the restrictions on civilian consumption, to make possible satisfying of military requirements, and some men of the industry believe that further tightening of restrictions on civilian use is to be expected as the year progresses. Consequently, it is not at all certain that demand actually will show the increases that have been forecast. Uncertainties over income taxes also cloud the future of earning power in the oil industry.

Profits of 25 Oil Companies 29 Percent Lower in 1942 Than in 1941

Net profits, after all deductions, including interest, depreciation, depletion, amortization, federal taxes, minority interest, etc.

COMPANY	1936	1937	1938	1939	1940	1941	1942	Percent Change 1941-1942	[6]1936-1939 Average Annual Earnings	Percent Difference of 1942 from 1936-1939 Average
Atlantic Refining Company	$ 7,342,197	$ 9,935,045	$ 4,310,913	$ 5,023,282	$ 6,217,453	$14,346,229	$ 6,799,024	— 52.6	$ 6,652,859	+ 2.1
Barnsdall Oil Company	2,262,544	11,903,029	2,837,897	1,720,292	2,193,471	5,026,202	2,801,846	— 44.2	2,180,940	+ 28.4
Derby Oil & Refining Corporation	248,874	426,823	*164,358	*21,248	105,890	393,182	290,894	— 26.0	122,522	+137.4
Eureka Pipe Line Company	*31,090	*5,849	*14,937	31,378	*24,636	76,481	196,585	+157.0	*51,124	.....
Fohs Oil Company	1,181,382	1,476,458	777,683	349,600	*9,785	*307,311	*141,483	.....	946,281	.....
Houston Oil Company	500,441	1,443,456	1,304,735	1,010,530	870,557	1,352,886	1,149,316	— 15.0	1,064,790	+ 7.9
Lion Oil Refining Company	887,457	945,334	912,482	652,362	456,873	979,830	887,457	— 9.4	849,409	+ 4.4
National Transit Company[2]	401,166	[3]604,985	447,650	463,624	545,703	579,120	663,311	+ 14.5	476,856	+ 39.1
Navarro Oil Company	291,090	[4]674,933	[4]579,947	[4]232,566	[4]231,093	[4]362,260	[4]343,093	— 5.2	444,634	— 22.8
Pacific Western Oil Corporation	1,582,326	1,388,710	1,217,378	813,689	*212,986	437,512	789,666	+ 80.0	1,250,526	— 36.8
Phillips Petroleum Company	17,875,489	24,113,874	10,317,826	9,833,314	11,590,317	17,436,977	13,129,458	— 24.7	15,535,126	— 15.4
Plymouth Oil Company	1,739,682	2,935,342	2,601,377	2,475,051	1,442,739	1,546,895	1,770,333	+ 14.4	2,437,863	— 27.3
Pure Oil Company	7,658,372	11,403,895	5,412,903	8,290,418	8,718,057	15,285,255	13,761,826	— 9.9	8,191,374	+ 68.0
Quaker State Oil Refining Corporation	1,041,034	1,041,848	527,610	1,584,026	347,832	1,519,117	1,298,265	— 14.5	1,048,629	+ 23.8
Standard Oil Company of Kentucky	3,793,451	4,182,900	3,779,706	3,979,562	3,818,408	3,671,220	2,677,170	— 27.0	3,933,905	— 31.9
Standard Oil Company of Ohio	4,194,314	3,362,960	1,964,605	5,602,499	6,209,008	6,249,443	5,649,880	— 9.5	3,781,094	+ 49.4
Sun Oil Company	7,563,554	9,544,085	3,085,119	6,959,677	7,969,068	16,532,540	8,671,050	— 47.5	6,788,109	+ 27.7
Sunray Oil Corporation	550,440	950,850	569,314	605,552	527,910	853,276	818,713	— 4.0	669,039	+ 22.3
Superior Oil Corporation	147,895	446,246	332,579	61,548	152,225	146,503	184,652	+ 26.0	247,067	— 25.2
The Texas Company	38,260,341	54,574,319	23,139,030	32,886,807	31,547,662	51,874,681	35,060,001	— 32.4	37,215,124	— 5.7
Texas Gulf Producing Company	823,410	[5]604,585	766 000	614,670	329,800	316,730	405,220	+ 27.9	702,166	— 42.2
Union Oil Company of California	6,133,398	12,061,332	6,862,758	5,846,240	4,606,789	6,239,232	5,537,329	— 11.2	7,725,932	— 28.3
Universal Consolidated Oil Company	239,561	40,578	350,657	513,393	228,190	308,874	117,510	— 61.9	286,047	— 58.9
H. F. Wilcox Oil & Gas Company	18,579	127,283	254,057	361,261	165,035	339,754	187,716	— 44.7	190,295	— 1.3
Woodley Petroleum Company	216,520	215.590	90,629	119,181	140,689	195,127	110,837	— 43.1	160,480	— 30.9
Total 25 Companies	104,922,427	144,398,521	72,263,560	90,009,274	88,167,362	145,762,015	103,159,669	— 29.2	102,898,445	+ 0.2

* Loss. [1] Includes $857,852 profit on sale of East Texas properties and after deducting $2,730,576 lease purchases. [2] Does not include operation of subsidiary, National Transit Pump and Machine Company. [3] Includes non-recurring income of $105,293. [4] Before federal income taxes. [5] Includes non-recurring deductions, of approximately $100,000 on losses of leaseholds abandoned and $238,000 set aside as provision for contingencies. [6] OPA has pursued price policy justifying prices that permit profits equal to 1936-1939 average.

Wartime Pipe-Line Reversals Test Engineering Ingenuity

Mud pumps, still equipped with shear-relief valves are revamped to handle refined products, while drilling engines provide power through effectively enclosed V-belt drives which maintain required fire and vapor seal between power and pump units. Intricate manifolding permits selective use of pumps for any type of delivery to initial feeders of either of two Atlantic Seaboard systems.

By ELTON STERRETT, Staff Writer

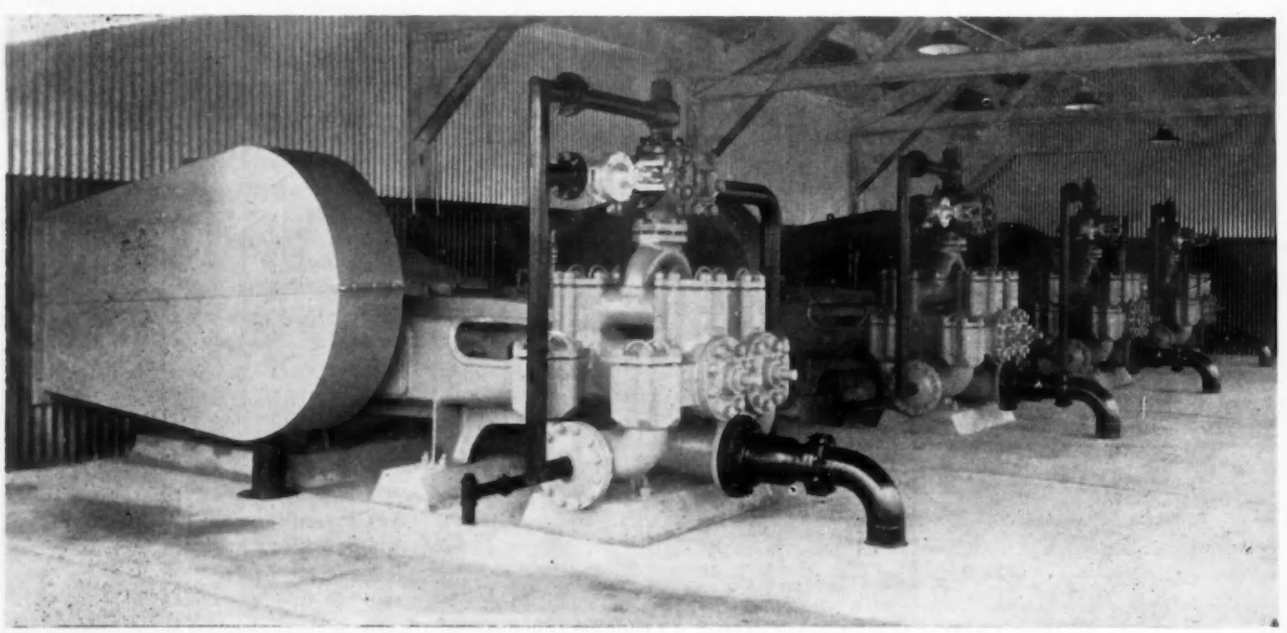
REVERSALS of pipe-line systems, and the drastic readjustment of facilities, flow movements and operation schedules, to provide the required feeder lines for new long-distance pipe lines to the Atlantic Seaboard involve much more than the mere throwing of a loop manifold around each intermediate pump station of the reversed line, even should hydraulic gradients and pipe-wall thickness theoretically permit such a change. When to all the normal difficulties of such a conversion are added almost insurmountable obstacles in the way of obtaining pumps, valves, and even relatively short lengths of indispenable tie-in pipe, it is a tribute to the companies concerned that readjustments are made at all, and a triumph of engineering and operation when such changes are made on schedule.

Feeder systems for both the Big-Inch and the Plantation lines extend far from the actual initial pumping stations of either. The Bayou line, westward extension of the Plantation line, is a 281-mile line to bring refinery products of the Houston-Gulf area directly to the 12-inch line at the Mississippi. The Big-Inch, nominally beginning at Longview with the high pressure pumping installations on the 24-inch main line, actually extends well into the East Texas field in the same diameter and with the same pipe and working pressures as the trunk line. Into this latter tie the crude-oil system, while a 16-inch main trends southwesterly from the Longview station to bring heater oil into the station's storage tank farm.

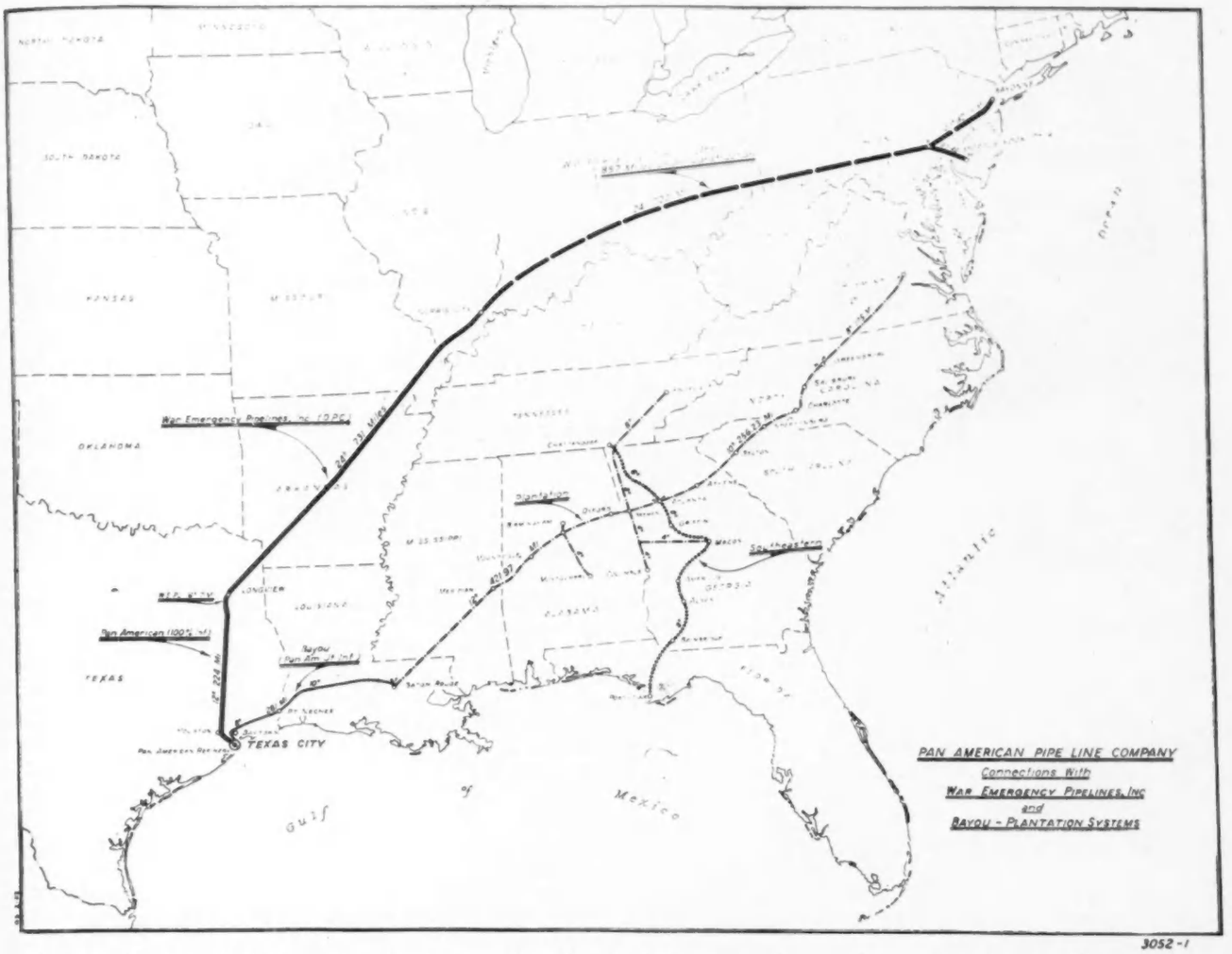
This 16-inch line extends to the Gregg-Smith County line, near which it will be tied into reversed lines formerly transporting East Texas crude to Gulf Coast refineries.

Of these reversed lines, that built by Pan-American Pipe Line Company during the winter of 1940-41* represents complete change-over of an entire system, with the extension from the tie-in at the Sinclair tunnel under the Houston Ship Channel carrying the feeder another 38.63 miles (as the pipe line runs) to the southernmost point of the entire network supplying the Big-Inch. The new station built by Pan-American Pipe Line Company at Texas City, to pump heater oil or light crude northward for delivery into the Big-Inch at Longview and gasoline and kerosine to the Bayou line, also bears the distinction of being the farthest south and west of the units delivering Gulf Coast

* Straight Flow Features Pan-American's Modern Line, THE OIL WEEKLY, February 17, 1941.



Slush pumps, equipped with metal valves and petroleum-resistant cups on the pistons, serve as pipe-line pumping units, with the shear-type relief valve being tied in to the suction chamber to provide positive protection against overload. The sheet steel belt drive guard is gasketed to form gas-tight joint against partition wall.



refined products to the Baytown tank farm on the 281-mile southwestward extension of the Plantation system.

This new station, with manifolding and gate capacity to permit any combination of its four pumps to transfer fluid to either outgoing line, is an outstanding example of the manner in which ingenuity and engineering have triumphed over material and equipment limitations — without sacrificing the streamlined appearance which makes for safety and efficiency of the unit planned under normal conditions.

The station, as seen from the road, has more the appearance of a permanent drilling-mud plant than of a pipeline pumping unit. Instead of the usual centrifugal or plunger type pumps, the pumping units are 3000-pound working-pressure drilling mud pumps pressed into pipe-line duty when no other high-pressure equipment could be made available. These pumps were converted to oil handling by removing the rubber valves and substituting special seats and valve disks, with valve openings kept as large as possible to obtain maximum retardation of flow through the restrictions, and thus avoid vapor lock.

The pistons, originally equipped for the usual rubber-sealed construction, have been fitted with metallic ring-type packing. Where the pumps are to handle heater oil or light crude, this type of construction will obtain ample lubrication from the fluid transferred.

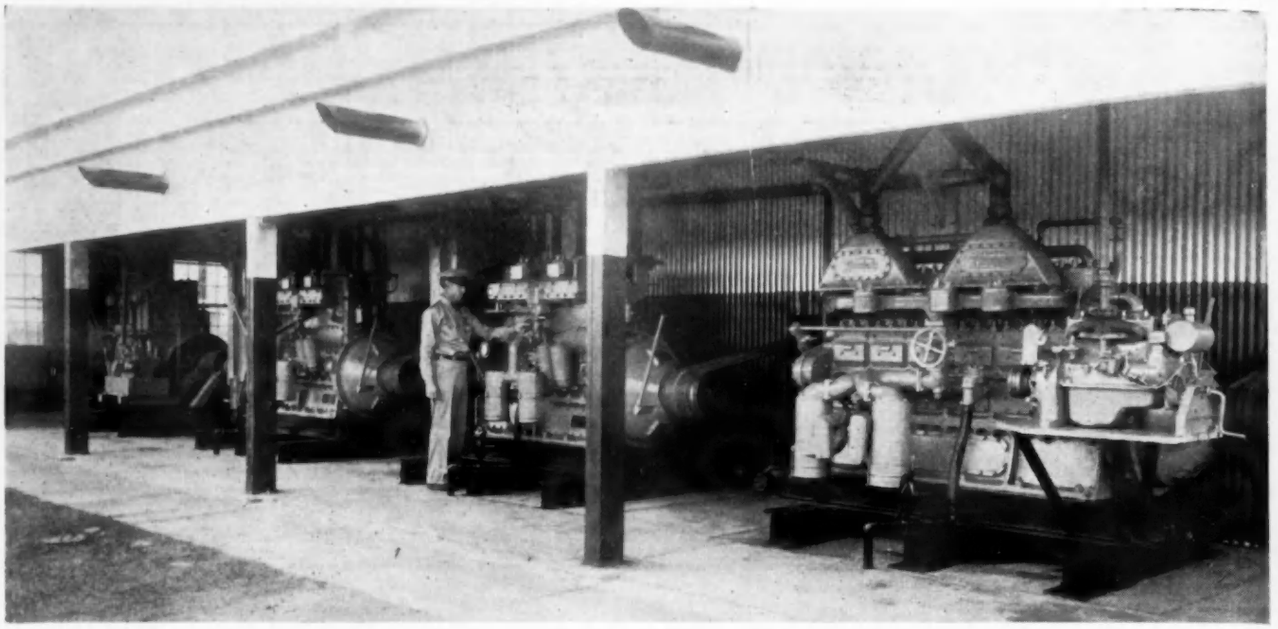
The station building, with wooden roof trusses throughout on account of the shortage of structural steel, embodies original features in design to enable safe handling of various volatile fluids. The pump housing, blanked off by a tight firewall from the power section, has a second solid wall on the office side, the other two being left open to the weather, with prevailing winds from the south having free entry under the shelter.

Seal between engines and pumps is provided by tightly-fitted sheet-steel shields enclosing the pump sheave and portion of the multiple-V-belt drive, the drive housing being formed in two halves, gasketed together along the mid seam, and with gasket closure against the sheet-metal firewall. The guard is carried on a short pipe standard. On the engine side, the guard is of open mesh, providing necessary ventilation for proper cooling of the belts.

With the usual spring-loaded relief valves among the many items unobtainable except after long delay, the original shear-type relief valves provided for mud-pump service were adapted to the protection of the pumps against overpressure. The relief valve line, carried horizontally to a point outside the pump body casting, makes a looped reversal to permit discharge into the suction chamber of the pump. The unloading bypass of each pump is carried across from the main discharge riser to a tie-in with the relief valve flow line to permit free circulation of fluid preparatory to putting any given unit on the line.

Gas Engine Power Units

The drive for each pump is from a skid-mounted gas engine, equipped with individual gasoline engine for starting. The drive, through V-belt to the pump, is adjusted by shifting the engine assembly along the three I-beam supports between engine skid and concrete floor. This shift is accomplished through heavy turnbuckles at either end of the engine, permitting alignment and sufficient slack for belt replacement, as well as maximum take-up for slack as the drives wear. The turnbuckles are used solely for shifting the engines, the usual



Power for the four pumps is through individual gas engine drive, the skid-mounted units, of the high-speed, heavy-duty type used for drilling, being aligned for multiple-V-belt drive through fire wall to pump sheave. Belt guards and other safeguards are yet to be installed.

bolts between slots in the support and properly located holes in the skid providing rigid set-up during adjustment. Clutches permit idling any engine before applying load.

The cooling water system is of the combined cooling-tower-reservoir type, with the tower section designed to provide ample cooling during hot weather. The flow into the engine is by gravity from the reservoir, the efflux being picked up by the engine circulating pumps and lifted to an overhead tank, whence flow is carried over the tower or into the reservoir through a circulating pump, individually driven.

Bypasses on the water line permit any required percentage of an engine's circulating water being returned over the unit in place of taking in fresh water, thus speeding the warming-up period preventing fuel waste.

Flexible connections for fuel and water lines, both intake and discharge, permit any shift of the engine within the capacity of the turnbuckles without imposing strain on fittings or requiring the breaking of any unions. Use of the short rubber sections also serves to isolate the engine, and thus to protect the cooling-system piping against any vibration which may be set up within the power unit.

The engines are housed in a section of the main building, across the fire wall from the pumps. This dividing wall, instead of being terminated at the roof line over the pumps, is carried upward to form a saw-tooth construction, in the vertical face of which are set full complements of louvres, permitting the escape of heated air from the enclosed space over the engines, or free entry of air through the apertures to permit ventilation through the openings on the north side of the structure.

Gas fuel for the engines is brought to the station in a manifold paralleling the engine bank, with a regulator to drop line pressure to a figure insuring adequate flow to the individual regulators in each engine fuel line, just short of the mixing valve. Each line is provided with an auxiliary shutoff valve, in the yard just outside the engine-room enclosure, as emergency engine control.

Dual Line Manifold

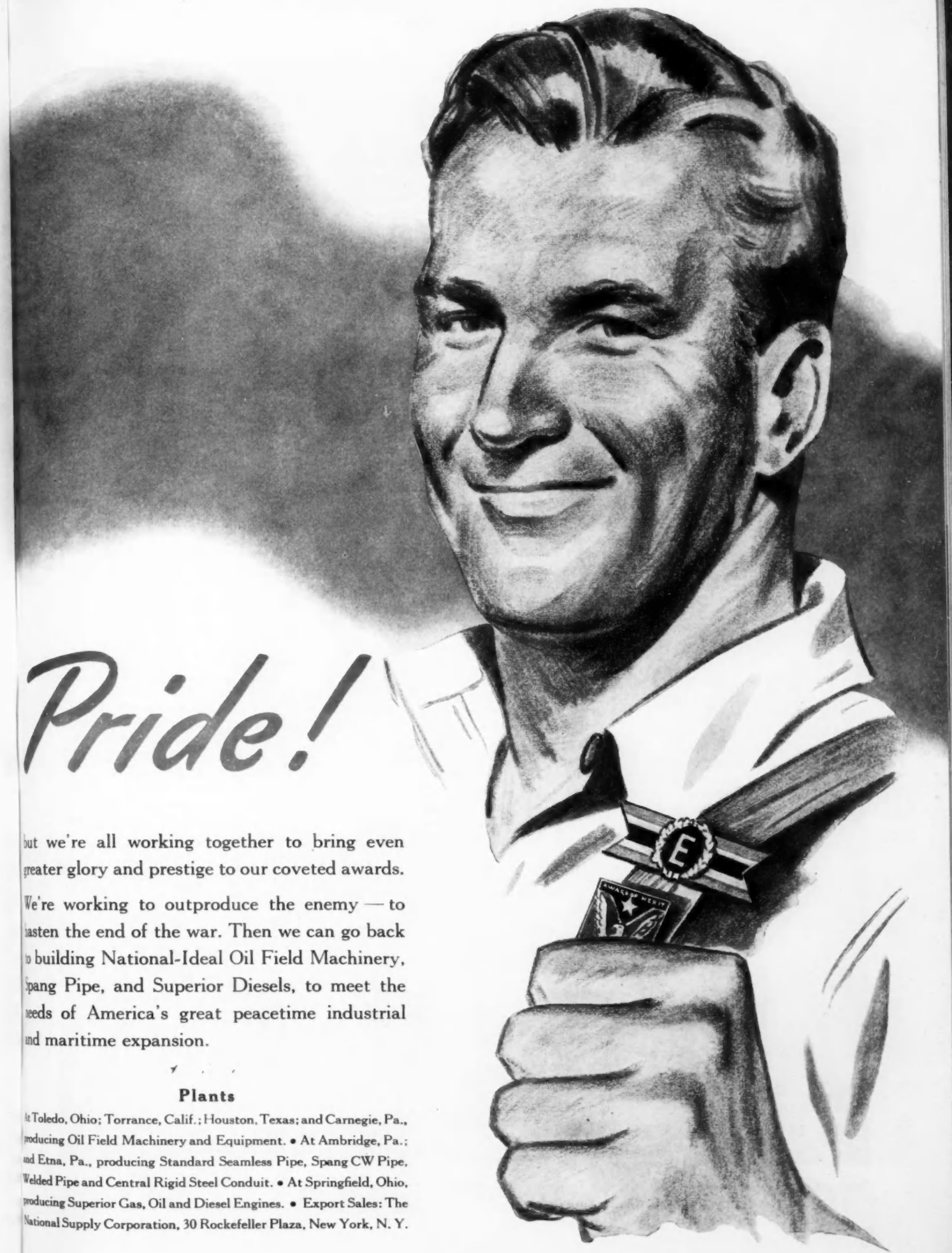
Since this station is intended to forward refined products over the Bayou line extension, as well as to handle selectively heater oil or light crudes northward to the Big-Inch, a manifold is required which makes avialable for suction on any of the pumping units any of the lines from the adjoining refinery yard. Likewise, with selective delivery into the pump, it must be so regulated as to permit transfer of the high-pressure fluid into either of the outgoing trunks. This control of incoming and outgoing streams is accomplished through dual manifolds, one being tied, through a master gate, to the end of the Bayou; the other to the Big-Inch-feeder system. Ten transfer gates on either of these manifolds permits selective pumping to the limit of lines entering the station yard.

In the fabrication of these manifolds, done at the station site due to impossibility of securing outside fabrication within the time limit, a shortage of proper class welding flanges was the first bottleneck. With flanges unavailable, scrap steel disks, of proper analysis and at least as thick as minimum code requirements, were dug up in scrap piles and the torch used to form the disks of the proper diameter.

These disks, machined to standard series dimensions, were yard-welded into place, and aligned in most instances at the exact spot of ultimate application.

The above-ground discharge lines, carried at a height which would facilitate manipulation of the gate controls most expeditously, are carried on the suction lines below, these latter being supported on concrete piers and footings set into the ground far enough to attain desired bearing rigidity. The support between suction and superior discharge lines consists essentially of a pipe nipple of proper diameter and length, welded to the top of the suction pipe. Terminating well above ground surface and just below the discharge, this pipe nipple carries within its upper end a large bolt, the head bearing against the upper pipe, the threaded end being supported on the rim of the nipple by a nut which may be run up or down the thread to attain desired spacing. Since the bolt is free to turn within the support of the pipe nipple, on threading within the pipe itself is required, and the load is carried on the relatively coarse, deep threads of the heavy bolt. Adjustment is easy, with one wrench being applied to the nut, the other to the head of the bolt.

In the provision of pipe lines for tying the new station to points of delivery on Big-Inch and Plantation, no available lines trending in its general direction made the problem of tie-in to the Baytown tank farm of the Bayou merely a matter of locating enough tubular



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At Toledo, Ohio; Torrance, Calif.; Houston, Texas; and Carnegie, Pa., producing Oil Field Machinery and Equipment. • At Ambridge, Pa.; and Etna, Pa., producing Standard Seamless Pipe, Spang CW Pipe, Welded Pipe and Central Rigid Steel Conduit. • At Springfield, Ohio, producing Superior Gas, Oil and Diesel Engines. • Export Sales: The National Supply Corporation, 30 Rockefeller Plaza, New York, N. Y.

At the gate on the left P. J. Sweeney, Pan American Refining Corporation, Texas City, puts a refinery tank on suction as E. R. Turner, vice president, Pan American Pipe Line Company, opens the discharge gate which ties the pump into the Bayou system. Watching the operation are H. J. Broderson, general superintendent, Texas City refinery at the left and, in order, J. E. O'Riordan, master mechanic, A. J. Rabe, general superintendent, F. E. Richardson, manager, and O. L. Williams, station engineer.

material to form the line, and then the more or less routine operation of laying it across typically marshy Gulf Coast terrain. The pipe finally obtained is not line pipe, but second-hand, thoroughly reconditioned 6-inch casing. Skirting the western shore of Galveston Bay, and barely heading the deepest of the indentations, the new line tends generally northward for all but the last 5 miles of its total length of 30.05 miles.

Daily throughput of this 30.05-mile Bayou feeder is set at 16,000 barrels, this capacity requires the operation of two of the four pumps in the Texas City station.

The Big-Inch feeder, from Texas City north and west to the Houston Ship Channel tunnel, roughly parallels and traverses at intervals several of the earlier pipe lines laid to Texas City, League City, and other intervening refining and storage centers. In obtaining line for the northward movement of heater oils or crudes from Texas City, it was necessary to assemble a number of formerly unconnected links, leased from other pipe-line companies for the duration, and then provide proper gates and tie-ins.

Leaving Texas City refinery yard of the Pan-American company through its own 8-inch line, the flow is then through a leased line of 8-inch, which until conversion has been used for low-pressure south-bound crude several years. At a point northeast of League City this line approached a second leased section, this latter of 6-inch. A tie-in, of 8-inch pipe, was strung across this gap. To complete the entire 38.22 miles of feeder, three short sections, of 1.31; 2.38 and 1.97 miles length respectively, were all that had to be laid to give north-bound delivery facilities from the Texas City station to the tie-in with the main reversed line at the Houston Ship Channel. This line, like the Bayou system feeder, is designed to deliver 16,000 barrels per day, with two of the Texas City pumps on the line.

From the junction south of the Houston Ship Channel to the San Jacinto station of Pan-American's main line that 12-inch carrier serves as suction header for that station, delivery to the San Jacinto unit being from pressures set up at Texas City by the farthest delivering point, augmented by quantities put into the system after the Pasadena Junction tie-in by the other five companies contributing products to the system.

From the San Jacinto station northward over Pan-American's line to its Douglass station, no changes were involved other than the installation of cross-overs or loops which would bring scraper traps and heat exchanger units in their proper relations to the new stream direction. North of Douglass, where the original line was 10-inch, instead of the 12 which prevailed from that point south to the Ship Channel tunnel, an intermediate station is installed, cutting the section into two parts, with the new (Henderson) station being equipped to boost pressures through two units to a station discharge pressure of only 400 pounds instead of the ruling 800 farther down the line. To increase the capacity of the line between this booster station and the point of delivery into the Big-Inch feeder 16-inch line, there will be installed a 4.70-mile loop of 10-inch line, picked up, "borrowed for the duration," from the head-of-line Sabine station in East Texas field to the former system. The isolated Sabine station then will become a field pumping station delivering into the other leg of the main feeder system into the Big-Inch Longview tank farm.

Design and conversion of the main line, as well as the overcoming of apparently critical shortages of equipment and materials in the Texas City station, illustrate the extent to which oil and pipe-line companies are willing to go in their attempt to convert their own facilities into links of national systems for the better distribution of petroleum products to help meet wartime conditions.

Office side of Pan American Pipe Line Company's Texas City pump station, showing raised roof over engine section at the right, with louvres opening above lower roof of pump and office building.

THIS OLD RADIATOR WILL MAKE *One Aerial Bomb!*

YOU CAN MAKE THESE WORN-OUT "GADGETS" SERVE AGAIN

This old, worn-out, useless radiator once "kept the home fires burning"—made cosy the home you so dearly love, and now that it has served its useful life it has been stored away—companion to many other pieces of household fixtures.

Yet—it can serve again and help *protect* that home for which it was originally purchased. Placed in an open-hearth furnace with an equivalent weight in pig iron it will make an aerial bomb with which to bomb the Axis.

Ships . . . Subs . . . Tanks . . . Guns . . . all are 50 per cent scrap metal. Turn in your old metal and keep the steel mill furnaces busy. Rubber, Copper, Zinc, Tin, Burlap and Manilla Rope are also needed. Gather it up and take it to your nearest junk dealer, *NOW!*

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Mid-Continent Reconditioning Practices Entering New Era

PART 1
Introduction and Problem of Eliminating Extraneous Forces and Their Restrictive Action on the Normal Flow of Oil and Gas

By L. E. ELKINS, R. H. SMITH, L. F. PETERSON, and P. P. MANION, JR.
Stanolind Oil & Gas Company

SINCE the first commercial oil well was completed, the problem of well reconditioning has stalked before the operator. It has been so perplexing because so many times it has been necessary to rely upon guesswork, or should it be more properly classified as "professional judgment"?

In the oil industry, one cannot "literally" bring the producing section of a well up to the surface where it can be studied and analyzed in minute detail; yet the need for the equivalent of such an analysis has probably keynoted the rapid advance in petroleum technology as applied to subsurface problems. The real problem of the petroleum engineer is to determine as many facts as possible concerning pertinent subsurface conditions and to design or select mechanical means to meet these subsurface conditions so that the oil or gas can be most efficiently recovered in the most economic manner. This same fundamental objective applies to every engineering problem in the production of oil and gas whether it be in the field of drilling, natural recovery, secondary recovery, conservation, withdrawal rates, reconditioning practices, etc.

The determination of these facts is gradually evolving from that of primarily "guesswork" to one of "scientific scrutiny." The implication of "guesswork" on the part of earlier operators is by no means a reflection on their ability. In fact, that intuitive judgment which has so characterized early development in the oil industry, is probably more creditable to the individual oil man than will be operations performed when more complete scientific facts are available.

Why the need for more scientific, thus more efficient, operations? The one sure thing in this world is "changing conditions." Increasing national and world crude requirements, the rapid rate of depletion of an irreplaceable natural resource, and the increasing difficulty of finding new reserves are three factors which are placing a premium upon producing additional oil the "hard way." A fourth factor which places a premium on increasing production and available reserves through reconditioning, is the present Government limitation on drilling wells in proven properties. Generally speaking, the increase in productive capacity occasioned through the reconditioning of wells is realized with less expenditure of strategic materials than is required for the drilling of new wells and, therefore, a logical emphasis on well reconditioning is in order. Well reconditioning will not eliminate the need for ultimate development of proven reserves, but it may help to offset any decline in production created by the war effort and limitations on drilling.

INCREASING oil consumption, depletion of existing reserves, increasing difficulty in finding new reserves, limitations on drilling of new wells, and scarcity of steel make reconditioning of wells imperative today. The technique of reconditioning oil wells, as brought out in this article, is rapidly approaching the stage where a minimum of guesswork has to be relied upon to solve the individual problem.

The article will be published in three installments. The first, presented herewith, contains a general introduction to the series and then takes up the problem of eliminating extraneous forces and their restrictive action on the normal flow of oil and gas. The second installment, to be published in an early issue, is devoted to the problem of increasing the drainage efficiency of a well by either extending its vertical or lateral sphere of drainage. The third and concluding installment discusses means of reconditioning wells to establish selective withdrawal and thus conserve energy or reduce lifting expense through reduction of free gas or excess water production.

This article is published by permission of the American Institute of Mining and Metallurgical Engineers, before which the paper was presented at its annual meeting in New York on February 16, 1943.

The "hard way," for the purpose of this paper, may be considered to refer to operating practices designed to deliver oil to the well bore which cannot be brought there efficiently and economically, and without waste, unless a secondary source of reservoir energy is supplied or unless the producing section, as penetrated by the well, is altered in some way to take advantage of the existing available reservoir energy. Practices of the latter type fall within the scope of this paper.

Before any well is considered for reconditioning, there must be some economic motive. There may be a good possibility of increasing the well's allowable and/or productive capacity, whichever controls the rate of revenue return from the well. The motive may develop through allowable penalties imposed by regulatory bodies because of unnecessary dissipation of energy or it may, and often does, develop through voluntary efforts to effect conservation. Along with the above, there is the parallel motive to increase the available reserves on any one property. It is often the case that a well is reconditioned to reduce lifting cost occasioned through handling excess water, or to remove foreign substances interfering primarily with the mechanical operation of well equipment.

At any rate, when a well directly or indirectly places an operator's interest at an economic disadvantage, it should be analyzed for its reconditioning possibilities.

In order to determine if reconditioning is desirable or possible, certain specific questions must be considered. They may be generalized as follows :

1. Is the well in good "mechanical" condition, or is some plugging agent or extraneous fluid restricting, in some manner, the otherwise normal flow of oil or gas?

2. Is there sufficient oil or gas remaining in the area of drainage influ-

Sub-Surface Facts
ON THE CONTROL OF FLOWING WELLS

No. 2 | 1943 | DALLAS, TEXAS

NEW TYPE F SAFETY VALVE SERVES DUAL PURPOSE...

A positive, automatic Sub-Surface Tubing Safety Valve and Bottom Hole Choke . . . that's the New OTIS Type F Safety Valve. Serving a dual purpose, it is positive, yet no more complicated than any ordinary piston assembly.

It is essentially a spring loaded piston, through which an orifice is drilled to serve as a flow bean. On the lower end of the piston and extending below the body of the tool is the valve. Flow enters the flow bean through four horizontal ports in the piston, situated just above the valve. (Fig. 1) The entire flow is directed through the bean by pressure-seal packing within the housing.

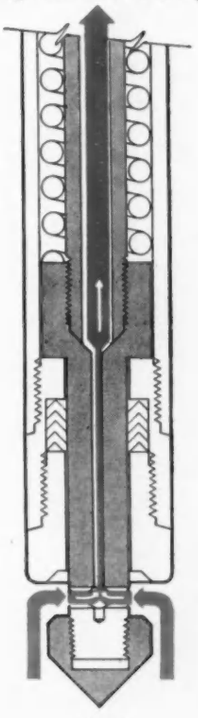


Fig. 1

The piston is held open by compression in the spring which forces the piston down against the upward force of the flowing differential pressure. The instant this pressure differential exceeds the amount for which the spring was adjusted, the piston moves up, the valve engaging the seat and shutting off all flow through the tubing.

The tool is operated entirely by pressure differential and is not dependent upon flow velocities.

Fig. 2

This feature completely eliminates the sensitiveness and inconsistencies that frequently cause trouble with velocity type valves.

The Type F Safety Valve has been used primarily in gas wells, condensate wells and wells with high gas/oil ratios to prevent freezing in flow lines, and at the same time to provide protection against uncontrolled tubing flow. The practice is to introduce sufficient compression into the coiled spring to hold the piston in its open position so long as the well is producing against the pressure maintained on the surface gathering system, but to close instantly should the surface pressure drop below a predetermined level. This provides an automatic Sub-Surface shutoff in the event surface connections fail or are damaged from any cause.

NEW CONSTRUCTION PREVENTS FLOW-CUTTING

Resistance to abrasion, most important feature

The abrasive action of the flow stream was one of the most important considerations in the basic design of the Type F Valve. The cutting action of the flow stream entering the valve is greatly reduced by placing the four horizontal ports at 90 deg. angles. This causes the flow entering each port to deflect upwardly against the flow from the opposite port, thus cushioning the change of direction and greatly reducing cutting at this point. (Fig. 2.)

The construction of the new valve is such that both the valve and valve seat are placed out of the direct line of flow beneath the bean where the flow velocities are relatively slow. The flow course above the bean is one straight bore through the valve and mandrel assembly—streamlined with no baffles or projections to be cut out or to impede flow. (Fig. 1.)

The Type F Safety Valve is set at a depth where the temperature of the flow stream is sufficiently high to absorb the temperature loss due to the pressure drop without causing freezing in the flow stream.

Like all other Otis Sub-Surface Controls, the Type F Safety Valve is run and pulled under pressure on a steel measuring line.

NEW DESIGN CREATED AFTER MONTHS OF EXPERIMENTAL FIELD TESTING

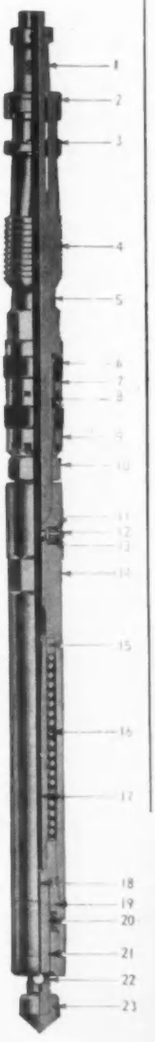
The New Type F Combination Bottom Hole Choke and Automatic Safety Valve was not created overnight—nor was it the result of a sudden inspiration. On the contrary, many months of actual field testing with tools of various designs and constructions were required before the design was developed that would give the desired performance. However, each test of these various experimental designs revealed helpful data and information that eventually lead to the construction of the new tool. Without these extensive preliminary tests, the new construction probably would never have been found. Now, after having closely observed for eight months the results of several of these new Type F Valves installed in high pressure wells with severe abrasive flow action, Otis is very much pleased with their performance and has given them its stamp of approval.

TYPE F DESIGNED TO MEET SPECIFIC NEEDS

Prevents Freezing of Flow Lines and at Same Time Safeguards Well Against Uncontrolled Flow

The purpose of this new tool is to provide a Removable Bottom Hole Choke to which is added a Safety Valve which completely closes off flow through the tubing whenever the pressure differential across the special Bottom Hole Choke Bean exceeds a predetermined amount. The pressure differential at which the valve operates can be adjusted over such a wide range that this new tool can be used very effectively as a Tubing Safety Valve only, or as a combination Bottom Hole Choke and Tubing Safety Valve.

As in the case of the Regular Bottom Hole Choke, this new combination tool reduces the flowing pressure at a depth where the temperature of the gas is sufficiently high to permit the temperature loss due to gas expansion without causing freezing in the flow stream.



PARTS LIST

1. Slip Carrier
2. Slip Carrier Band
3. Mandrel Band
4. Slips
5. Mandrel
6. Otis Sealing Cups
7. Upper Sealing Cup Ring
8. Cup Ring Packing
9. Lower Sealing Cup Ring
10. Cup Nut
11. Equalizing Orifice Plate
12. Equalizing Valve
13. Equalizing Valve Spring
14. Valve Cage
15. Adjusting Ring
16. Safety Valve Spring
17. Bean Extension
18. Bean
19. Packing Housing
20. Chevron Packing
21. Valve Seat
22. Intake Ports
23. Valve

OTIS PRESSURE CONTROL, INC.

DALLAS, TEXAS

Branches: Houston and Corpus Christi, Texas; Hobbs, New Mexico; New Iberia, Louisiana; Magnolia, Arkansas.

Representatives: Otis Eastern Service, Inc., Wellsville, N. Y.; Western Pressure Control, Los Angeles and Bakersfield, Calif.

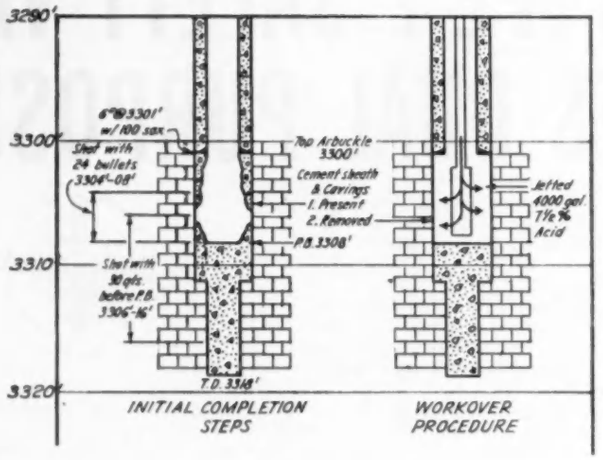
Export Office: 74 Trinity Place, New York City

CASE No. 1

Removal of Cement Sheath from Well Bore Previously Squeeze Cemented

MECHANICAL CONDITION OF WELL

BEFORE OPERATION AFTER OPERATION



FORMATION:

Arbuckle Dolomite; Effective thickness, 6 feet; Porosity, 15 percent; Permeability, low. Completed: 1-2-38. Potential 103 barrels after shot with 30 quarts at 3306-16 feet, acidized 500-1000 gallons, tested water; Plugged back to 3308 feet, shot with 5 quarts at 3304-08 feet, acidized 500 gallons, tested water; drilled out and squeeze cemented to 3308 feet, acidized 300 and 400 gallons, shot with 24 bullets at 3304-08 feet.

PRODUCTION TESTS:

	6-38, 25	B.O.P.D.	2	B.W.P.D.
	6-39, 35	B.O.P.D.	2	B.W.P.D.
	6-40, 15	B.O.P.D.	8	B.W.P.D.
Before cleanout*	5-41, 11	B.O.P.D.	9	B.W.P.D.
After cleanout	7-41, 7½	B.O.P.D.	1	B.W.P.D.
Before workover	7-42, 5½	B.O.P.D.	½	B.W.P.D.
After workover	8-42, 14	B.O.P.D.	12	B.W.P.D.
After workover	10-42, 15	B.O.P.D.	15	B.W.P.D.

WORKOVER:

Consisted of jetting with 4000 gallons of 7½ percent acid.

RESULTS:

Cement sheath removed and well bore cleaned up. Well making allowable of 15 barrels per day 3 months after workover.

*By sand pump.

ence of the well in question to justify reconditioning operations?

3. At what interval within the section is the objective oil or gas zone located?

4. Is there sufficient reservoir energy to supply the motivating force to move this oil toward the well bore?

5. Is the distribution of fluid (oil, gas and water), in the section of the reservoir around the well, in relation to the permeability profile, such that the desired oil or gas can be selectively withdrawn if necessary?

6. What mechanical operation is required to accomplish the objective?

7. Are the physical characteristics of the pay section, reservoir pressure, and the shape of the penetrating well bore such that the mechanical operation can be accomplished?

8. Would reconditioning be economic?

It is not implied that the thorough engineer or operator will meticulously follow through the eight steps listed above before performing workover operations on any well or project. In any one certain area, the answers to many of the questions are of general knowledge to the experienced operator, but some of them will usually serve as a challenge to him if the best results are to be realized, and in this paper, the various cases treated will not be subjected to all eight questions as each has been selected to illustrate the solving of a specific type problem.

Reconditioning operations may be divided into three general classifications, as follows:

1. The problem of eliminating extraneous forces and their restrictive action on the normal flow of oil and gas.

2. The problem of increasing the drainage efficiency of a well by either extending its vertical or lateral sphere of drainage.

3. Means of reconditioning wells to establish selective withdrawal and thus conserve energy or reduce lifting expense through reduction of free gas or excessive water production.

Problem of Eliminating Extraneous Forces and Their Restrictive Action On the Normal Flow of Oil and Gas

Following the suggested outline of questions to be answered in analyzing reconditioning prospects, one should first determine if the normal productivity of the producing section is restricted by extraneous forces. Is the pay zone partially or entirely covered with cavings or is the sand itself plugged by precipitation of salts or paraffin? Has the drilling mud cake or cement sheath been entirely removed from possible productive channels? All of these conditions may develop in different fields depending upon completion practices, natural formational characteristics, etc.

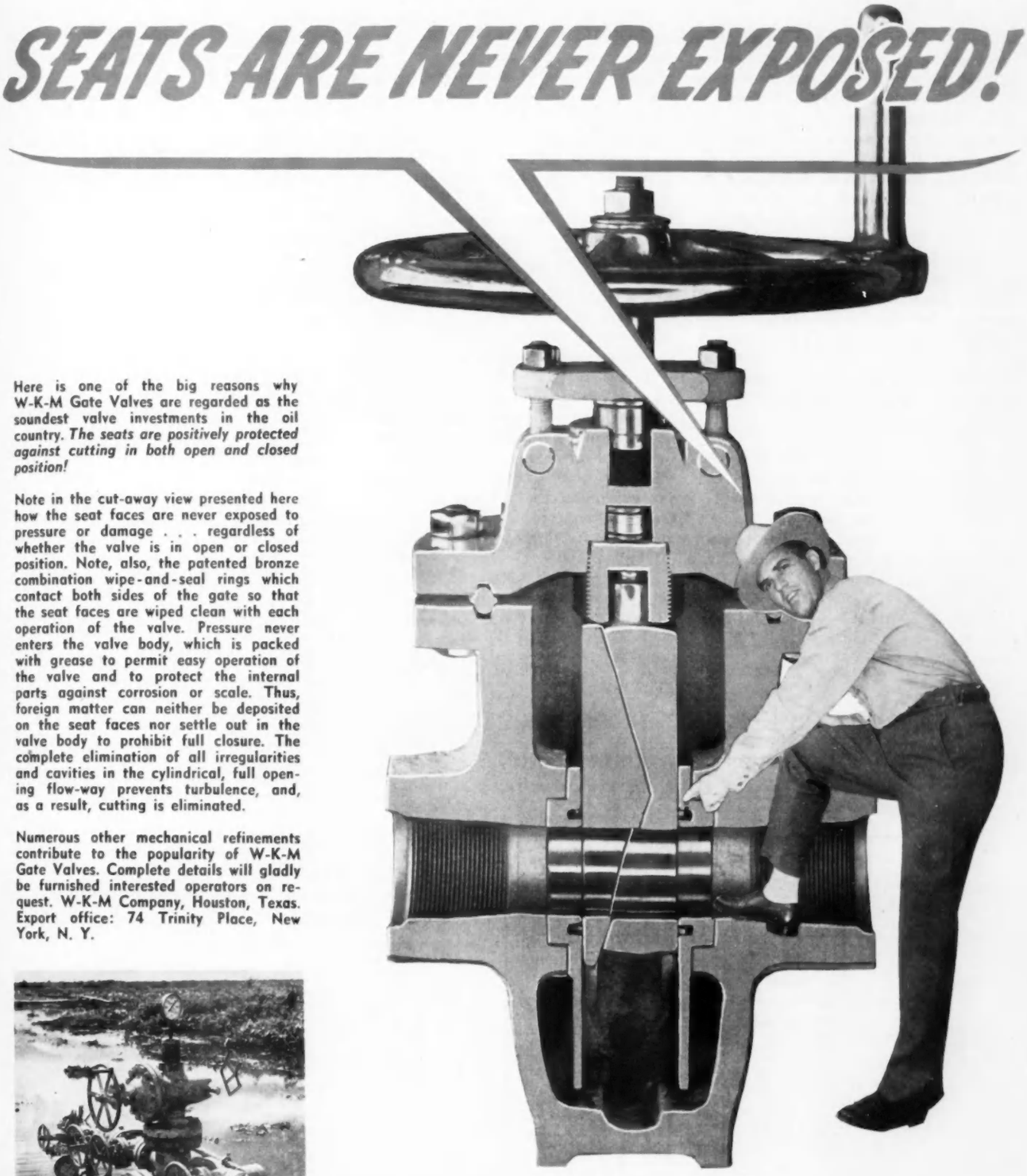
The above restrictive forces are primarily plugging agents. They become stuck to, or bridged in, the natural channels of permeability. Many times the restricting action is obvious because of unusual decline in productivity and its removal is simple and requires no special innovation. The use of sand pumps, special bailers, reverse circulation processes, acid jet guns, wall scrapers, underreamers, application of heat, and such, all have their field of application in removal of plugging agents in open hole and sometimes behind pipe.

If the operation is not one of the relatively simple cleanout type as listed above, more basic data and more specialized technique may be required. Complications develop many times when pipe is set through pay formations, or if the plugging agent penetrates into, or is deposited deep in, the channels of permeability. The reconditioning then either requires removal of the plugging agent by abrasion, or scraping, or by solvent action, or it may be necessary to create new permeable channels by shooting or its equivalent. Plugging back, sidetracking and redrilling the pay section may sometimes be justified if the plugging agent is deposited by the oil stream as it converges on the well bore. Case histories have been prepared to illustrate how two of these typical problems develop and how they can or might be solved.

One way of removing plugging agents on the face of the pay formation is illustrated in Case No. 1. As is noted in this particular incident, solvent and erosional properties are combined to remove the plugging agent. In like manner, a great majority of agents plugging the face of a pay section can be removed by combining solvent properties of different fluids with the erosional effects of different types of jet action. The presence of a plugging

OPEN OR CLOSED, W-K-M GATE VALVE

SEATS ARE NEVER EXPOSED!



Here is one of the big reasons why W-K-M Gate Valves are regarded as the soundest valve investments in the oil country. *The seats are positively protected against cutting in both open and closed position!*

Note in the cut-away view presented here how the seat faces are never exposed to pressure or damage . . . regardless of whether the valve is in open or closed position. Note, also, the patented bronze combination wipe-and-seal rings which contact both sides of the gate so that the seat faces are wiped clean with each operation of the valve. Pressure never enters the valve body, which is packed with grease to permit easy operation of the valve and to protect the internal parts against corrosion or scale. Thus, foreign matter can neither be deposited on the seat faces nor settle out in the valve body to prohibit full closure. The complete elimination of all irregularities and cavities in the cylindrical, full opening flow-way prevents turbulence, and, as a result, cutting is eliminated.

Numerous other mechanical refinements contribute to the popularity of W-K-M Gate Valves. Complete details will gladly be furnished interested operators on request. W-K-M Company, Houston, Texas. Export office: 74 Trinity Place, New York, N. Y.

↑ 4000 lbs. tubing flow pressure on this well makes choke changing a frequent operation. W-K-M Gate Valves on the flow wings of this manifold open and close with ease and provide absolute control at all times.

W·K·M GATE VALVES

Cost No More than Ordinary Valves

agent was made evident by a review of past workover history and well performance.

Case No. 2 is presented to show a combination of plugging agents acting beyond the well bore to restrict flow to the well. Although the situation is rather unusual, it serves to illustrate a principle. As far as the junked hole is concerned, it can't be removed. The effect of a partial water block may or may not be significant, but it can offer considerable resistance to flow of oil. The water may exhaust and its blocking effect become less significant; however, when the need for additional production capacity grows, the well will probably be shot with nitroglycerine and the fractures created should permit the oil to bypass the water block, at the same time, the shielding effect of the junked hole should be offset by the greater permeability created in the unshielded direction. The basis for suspecting the plugging action in this well is plainly indicated on the diagram.

These two illustrations are not intended to cover the field of plugging agents, but they serve to illustrate certain principles which can, and have been, used to solve problems of this nature.

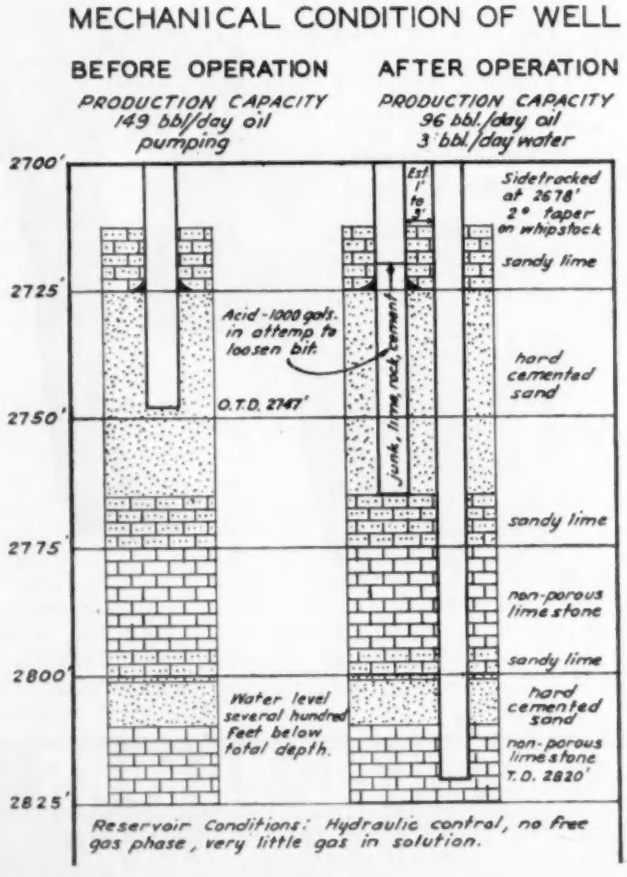
There is another extraneous force, other than the plugging agent, which may often retard the natural flow of fluid from the producing section. A head of water superimposed on a producing section will often smother the life out of an oil pay. It is well to remember that the casing in a well is literally suspended through a series of alternating fluid and non-fluid bearing strata. Where there is porosity there is oil, gas, or water. Where the porosity is connected and permeable, fluid will move to points of low pressure. Normally inside the oil string the pressure is lower than that existing at the same level outside, sometimes this difference is of considerable degree near the casing shoe, and in other instances, close to the surface. Therefore, with a casing leak or failure of cement at the casing shoe, water from other zones thereby exposed must be produced as fast as it comes in, together with the well's normal production, or a pressure head is superimposed on the pay section and a reduction if not a complete elimination in rate of oil or gas production results. Problems of this nature require, first, a recognition of the presence of the extraneous water; second, its location; and third, its elimination.

The presence of extraneous water is not too difficult to detect. If water shows up in a well producing clean oil, an investigation of the position of the well with respect to edge-water encroachment fronts and bottom water, together with an analysis of the history of nearby wells will often supply a fairly definite clue as to the possibility of extraneous water. If the well is producing at capacity, an increase in water and total fluid is a fairly definite indication of foreign waters. A check of the productivity index will usually provide the necessary data to prove or disprove the presence of extraneous water. Finally, in many areas, a water analysis for mineral content will decide the issue if there is a knowledge of the mineral content of other waters existing in the section penetrated.

The problem of locating extraneous water entering through a casing leak, or around the casing shoe, is rather simple. The familiar method of pumping a plug down the casing is tried and proved. Also, a rather novel idea of depressing a water column in a well by pumping in oil, and by using an "Electric Pilot" to follow the oil-water interface down the casing, has been used to locate casing leaks. This is illustrated in Case No. 8 and will be discussed later in Part 2.

Once the foreign water entry point is located, the repair job may be simple or complicated. The following case histories will show two problems of this nature and illustrate the need for excluding the extraneous water:

Case No. 3 shows how water entering



CASE No. 2

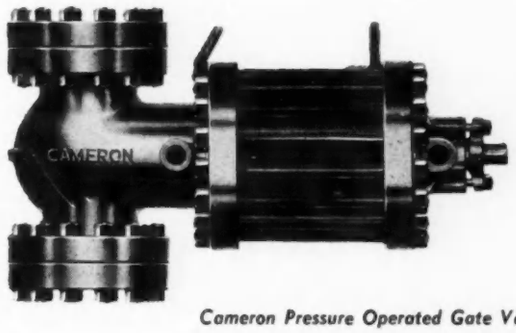
Workover Which Resulted in Leaving Two Types of Plugging or Restrictive Agents in Pay Zone Which Significantly Reduced Well Productivity

OBJECT:

To obtain full penetration and increase productivity 25 to 35 percent based on 3 other wells deepened without trouble. Tried to deepen with cable tools, lost bit, sidetracked with rotary using regular mud, February, 1941.
Probable cause for reduced productivity: (a) Flow channels to well partially blocked on one side by junked hole, cement, spent acid, etc.

ATTEMPTS TO REMEDY:

In January, 1942, well treated with chemical wash consisting primarily of kerosine and an asphaltic-base solvent with no effect on well.
When extra capacity needed it should be possible to obtain it by shooting and thus offset restrictive action of plugging agents by fracture-type channels.

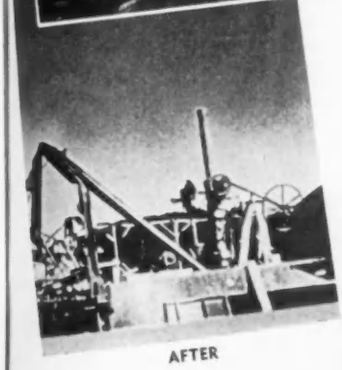


Cameron Pressure Operated Gate Valve

Champion

TAMER OF WILD WELLS!

BEFORE



AFTER

Designed to prevent loss of control through the flow-line and through the well bore while pipe is out of the hole, the Cameron Pressure-Operated Gate Valve has performed yeoman service. It is generally considered as a vital unit in modern drilling control manifolds.

Because of its unique mechanical design which provides a pressure-tight seal even after long periods of being blown through by highly abrasive fluids, and its fluid pressure-operation by remote control, the Cameron Pressure-Operated Gate Valve has also distinguished itself by shutting in scores of wild wells that probably could not have been otherwise controlled except by costly and tedious directional relief well drilling.

This valve, like its famous companion equipment—Cameron Type SDA Pressure-Operated Blowout Preventers—employs a round ram-gate with patented self-feeding packing element. When closing pressure is applied, the ram-gate travels swiftly and smoothly to its seat cast integrally in the valve body. There are positively no delicate sealing surfaces to be damaged by the abrasive flow and should the seat become corroded, roughened or even substantially sand cut, the self-feeding packing element automatically flows out to compensate for the irregularities and seals against any well pressure so far encountered.

The numerous mechanical features which have raised this valve into a class by itself are fully explained and illustrated in your Composite Catalog, or complete details will gladly be sent to interested operators on request.

BEFORE

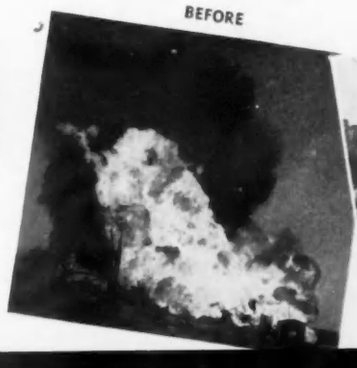
AFTER

CAMERON IRON WORKS, INC.

711 MILBY ST. HOUSTON, TEXAS

Export: 74 Trinity Place, New York, N. Y.
California: The Howard Supply Company, Los Angeles
Rocky Mountain: Mountain Sales and Service, Casper, Wyoming

BEFORE



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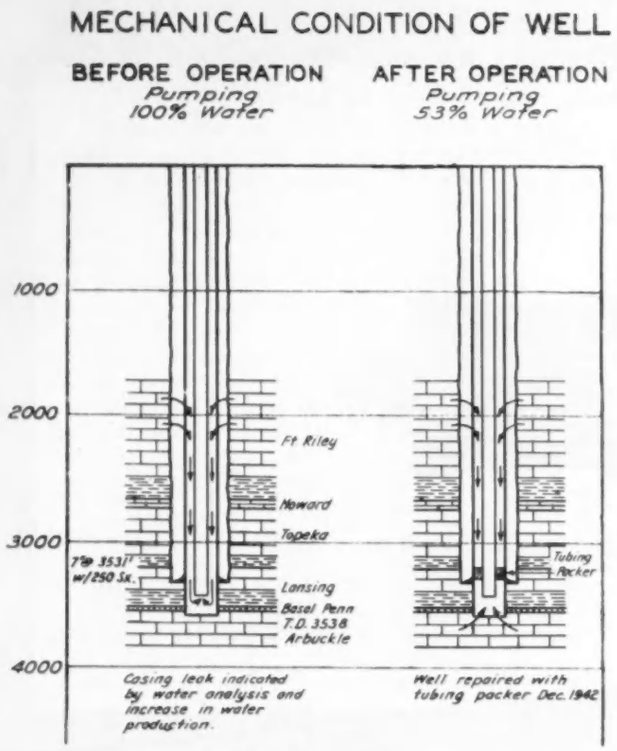


CASE No. 3

Illustrates the Need for Eliminating Entrance of Water Into a Well, Which Water Is Foreign to the Oil-Producing Horizon

FORMATION:

Arbuckle Dolomite, Effective thickness, 24 feet, Porosity, 15 percent, Permeability, medium.

COMPLETED:

March, 1934, Potential, 895 barrels, natural.

PRODUCTION TESTS:

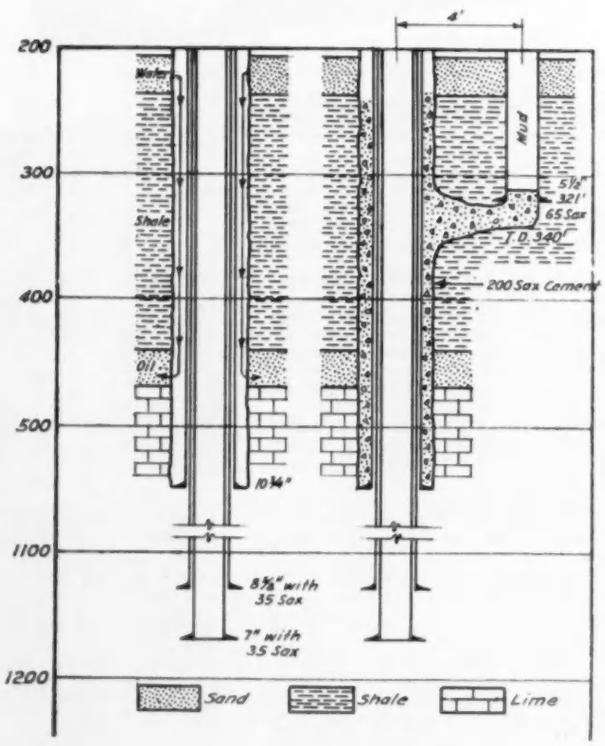
Pumping, barrels per hour:	Oil	Water	Percent Water
Before Casing Failure	5	11½	70
Prior to Workover	0	17	100
After Workover	4½	5	53

Rapid increase in water percent indicated casing leak, probably from Ft. Riley formation, the source of corrosive water in area; water analysis confirmed presence of water foreign to Arbuckle. Casing leak remedied by setting tubing packer.

Well has been pumping satisfactorily for approximately 10 months without any reappearance of the foreign water.

through a casing leak can completely exclude production from the oil producing horizon. Such an occurrence might cause abandonment of a well if it were producing, say, 90-95 percent water before the leak developed unless a record of productivity indices, or the equivalent, were available.

Case No. 4 serves to illustrate how fluid migration behind casing in multi-reservoir pools can complicate operations. The method used to correct this particular leak would not be practical in the average field but the three strings of casing through which a normal squeeze job would have to be performed, and the shallow depth dictated the choice of this procedure.



CASE No. 4

Suspected Water Migration Behind Casing of Deep Twin Well Is Successfully Shut Off by Unusual Method. This Is One Way That Foreign Water Might Enter an Oil Sand and Form Difficult Operating Problems

MECHANICAL CONDITION OF WELL:

Water from upper sand at 220 feet was flooding lower oil sand at 450 feet, due to uncemented string of 10¾-inch casing in deeper well producing from 1200-foot horizon. Nearby shallow wells were producing large volumes of water. Mineral analysis indicated water was from upper fresh-water sand. Some means of separating the sands outside of the 10¾-inch casing string was needed. Perforating slugs might not penetrate the three strings of casing.

WORKOVER PROCEDURE:

1. An 8-inch hole was drilled 4 feet from the deep well and to a depth of 321 feet.
2. 5½-inch casing was set and cemented at 321 feet with 65 sacks.
3. Plug was drilled and hole deepened to 340 feet.
4. Small amount of pressure was applied and intervening shale section broke down, allowing 200 sacks of cement to be pumped into the interval between the sands and back of the 10¾-inch casing in offending well.

RESULTS:

Water production on nearby shallow wells declined from 50 percent to 10 percent in 9 months. A typical example of reduction is one well tested 11 barrels of oil and 133 barrels of water before workover, and 11½ barrels of oil and ½ barrel of water after workover.

DIFFICULT DRILLING PROBLEMS SOLVED WITH

MICATEX

One of the most difficult of all drilling problems is encountered in drilling through loose, creviced or fractured formations heavily charged with gas. Unless the drilling mud has adequate weight, the well may blow out. (See Fig. 1.) This weight which is necessary to hold the gas pressure may be great enough to cause loss of circulation in the permeable formation. (See Fig. 2.) Providing adequate mud weight to control pressures and not thereby lose circulation was an extremely difficult problem until MICATEX was introduced to the oil industry.

MICATEX seals the walls of the formation and helps prevent loss of circulation. (See Fig. 3.)

This ability of MICATEX to help prevent blowouts and lost circulation is proved in the following drilling problem encountered in the Gulf Coast. A well at 9447 feet struck a loose, high-pressured gas sand and attempted to blow out with a mud weight of 11.7 pounds per gallon (88 pounds per cubic foot). The mud weight was increased, but when it reached 12.2 pounds per gallon (91 pounds per cubic foot) circulation was lost. The well was shut in and MICATEX was added at the rate of 5 pounds per barrel to a pit of mud weighing 12.5 pounds per gallon (94 pounds per cubic foot). This mud was then pumped into the hole, and indications showed that circulation was re-established soon after the MICATEX-mud left the drill pipe. Weight was then raised to 13.8 pounds per gallon (103 pounds per cubic foot) with no further loss of mud.

The well was drilled to 9651 feet with no additional trouble. At this point casing was run and the operators reported that the well "was so satisfactorily walled-off that the pipe didn't touch a thing." During the cementing operation full mud returns were obtained the whole time the 16-pound-per-gallon slurry was being run, further indicating the ability of MICATEX to provide an effective mud seal and a clean hole.

MICATEX, and all the other Baroid Products, take troubles out of drilling.

BAROID SALES DIVISION

NATIONAL LEAD COMPANY

BAROID SALES OFFICES: LOS ANGELES • TULSA • HOUSTON

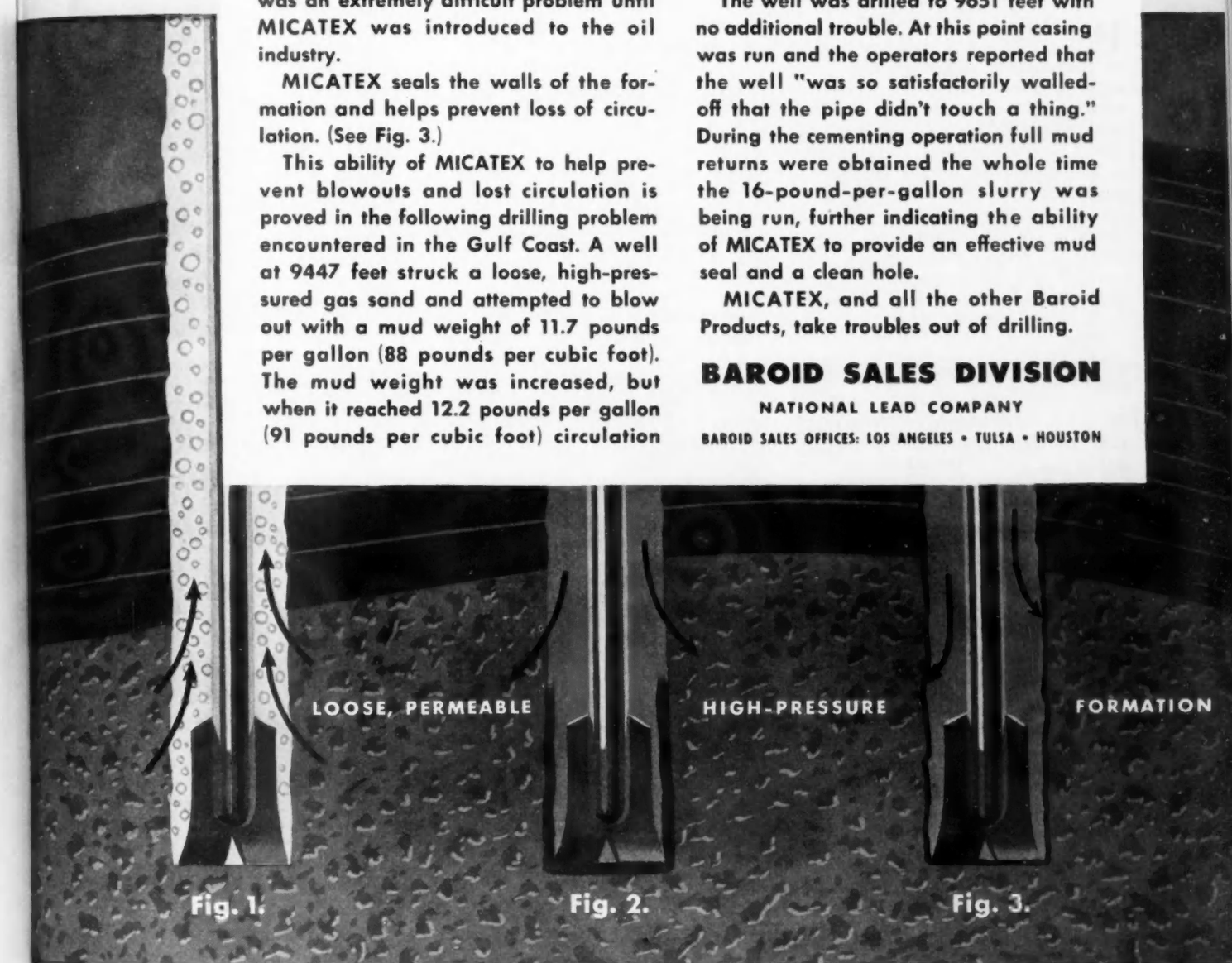


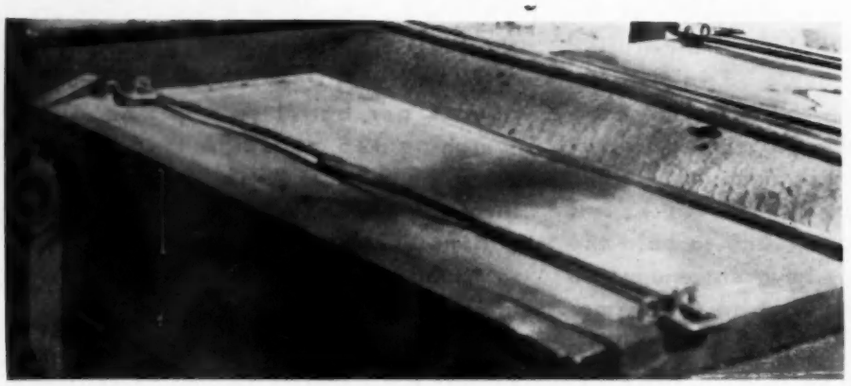
Fig. 1. Fig. 2. Fig. 3.

BAROID PRODUCTS: BAROID AND COLOX, AQUAGEL, FIBROTEX, BAROCO, STABILITE, AQUAGEL-CEMENT, SMENTOX, ZEOGEL, IMPERMEX, MICATEX, TESTING EQUIPMENT, BAROID WELL LOGGING SERVICE

PRACTICAL OPERATING *Hints* FOR

1. SECURITY

Locking Bar Protects Padlock Priorities



Welded loops atop tool box accommodate sliding member and effectively seal contents, with padlock being used solely to hold heavy bar in place against all types of damage.

PADLOCKS are now on the long list of unobtainable items, and every care must be taken of those now on hand to make them outlast the emergency. Since many padlocks are damaged by being called upon to serve as retaining units as well as pilferage safeguards, one drilling company revised the method of locking its tool chests so as to relieve the padlocks of all service save that of preventing unauthorized opening.

To fit with the two hasps at the sides of the heavy cover, through which padlocks were formerly inserted, a long locking bar was used, sliding in two guides on the lid and with locking or ward sections which offered much more resistance to damage than could the relatively small shank of the padlock member. Holes through the ends of the bar or the prongs permit the padlocks to be used through them to stop unauthorized sliding of the rod to the clear position. These locks are protected, during transportation, by the cover itself, and do not undergo heavy stresses if the lid be jammed or pried.

Reinforcing the bars in the center protects them against snagging or distortion when on the move.

2. WIRE LINES

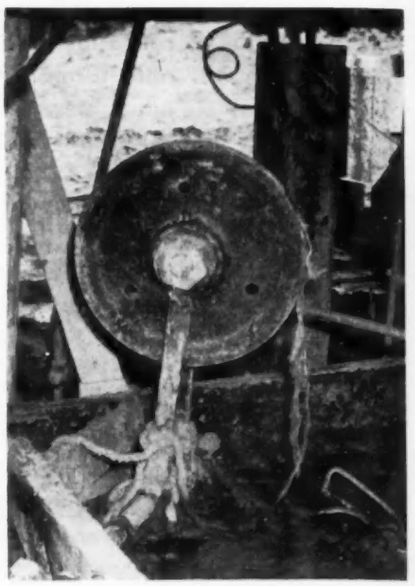
Deadline Anchorage Distributes Loading

MANY schemes for anchoring the dead line require the threading or passing of all the unused portion of the line through the anchorage unit, involving considerable line handling, and frequently requiring that it be dragged through mud or dirt, at the expense of ultimate line life.

One contractor uses an old sheave for dead-line anchor, mounting it in a fork which in turn is anchored to an eyebolt set into one of the derrick-foundation posts. The sheave support, of U-shape, is slipped through the eye of the bolt, and a heavy pin passed through the eyes at the end of the fork, serving as shaft on which sheave may revolve.

The threading of the dead-line on such a unit requires simply the passing of a loop of line down from the derrick floor or other elevated storage site for the unused line, the loop being set into the fork of the sheave support, the sheave then placed, and the pin securely fastened in place.

With such a unit, feeding in the new line simply requires the loosening of the wire-line clamps, while the sheave revolves and feeds on as much line as is required. When again tightened, the loop within the clamps is free to equalize stresses in both parts as the sheave revolves to distribute the load.



Old sheave with flexible shackling allows equilibrium of stresses in both parts of dead line.

3. FIELD EQUIPMENT

Protectors Extend Jack Screw Service

NEED for prolonging life of tires on field equipment has led to the wide adoption of the practice of relieving the tires of the load when the unit is stationed for any length of time, as on cementing jobs, when working-over a well, or using a truck-mounted slim-hole unit.

Screw jacks are usually used for this purpose, that portion of the screw above the base casting being exposed to dirt, grit and, in the case of cement trucks, an abrasive which tends to set firmly within the threads and cause damage.

One contractor equips his screw jacks

CHAINS THAT LAST!

You can count on Jeffrey Devil Dog oil well chains. Jeffrey is proud of its 65 years experience in chain building. A chain for every drilling service.

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985-99 N. FOURTH STREET COLUMBUS, OHIO
IN HOUSTON: 6358 AUDEN STREET

THE DRILLING RIG

$5.00 will be paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, *Houston.*

Protectors, of heavy sacking, safeguard exposed threads on the supports beneath equipment.

with protectors or "skirts," made from thoroughly cleaned cement sacks, which are slipped over the head and tied just below the holes for the actuating bar. These protectors are long enough to cover the exposed thread and to stop much of the dirt and grit which otherwise would reach the screw and cause accelerated wear of nut and thread.

The protectors may be removed for periodical cleaning, and do not interfere with proper lubrication of the equipment.

4. DRILL PIPE HANDLING

Inclined Shield Saves Impact at Rotary

TO PROTECT the pin ends of drill pipe joints as they are pulled in to the working floor, and prevent their banging against rotary table or exposed box of joint held within the slips, one company uses a buffer rack of steel construction. Consisting of a pipe frame with sheet-steel apron, the unit is set in front of the table, being bolted or spiked to the floor timbers, and located athwart the normal swing of the joint as the elevators are run skyward.

The end of the pipe, dragging over the floor, contacts the skid apron and is fended from the table by it, a pipe member at the top preventing the formation of nicked or serrated edges which might present operating hazard.

Being vertical on the side toward the table, the guard does not restrict normal working space when making up or pulling drill pipe, the rounded edges formed by the pipe side members preventing any auxiliary lines on the rig from fouling or being damaged by the shield.

Bolted to the derrick floor in the path of swinging drill pipe, this steel slope and rounded edges guide pin end and eliminate danger of contact with rotary or slips.

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Reconditioning Oil Wells With Steam

By F. R. COZZENS, Equity Oil & Gas Company

THE oil producer who tries to get a paying production from wells which are clogged with paraffin and sludge generally finds the cards stacked against him. Invariably, there is enough residue on the sand-face of every well to resist, to a certain degree, the free drainage of oil into the shot hole, and such resistance not only increases production costs, but is now a widely recognized factor in oil wastage. Because of these, and similar easily-proven facts, the cleaning of wells is being taken far more seriously, and a very outstanding present problem is to find the cleaning method best suited to the job, and one that can be carried out successfully under present wartime restrictions. The cleaning out, or reconditioning process has been generally accomplished in most oil districts by using one of four distinct methods, namely, explosives, carbide, commercial solvents, and raw steam. Steam was among the earliest methods used for the purpose in the Eastern stripper fields, and it has always been backed by a group of ardent supporters. Recently, its popularity has increased, not because steam is superior in all ways to other methods, but mainly because it can be made to do the work with available equipment, and usually with the need of but very little, if any restricted materials. Boilers and heating units are still fairly common in most localities. Water is not rationed, and where gas can not be had for heating purposes, there is generally coal, or even wood, one cord of which is equal in heating value to one ton of average grade coal. Besides being thus well adapted to the average producer's means, steam also produces heat and a localized softening effect, both of which are very beneficial to most oil sands.

Boilers generally used in the steam-cleaning process are of the up-right type, 15 to 40 horsepower, most of them being left-overs when drilling rigs became motorized. Any boiler, however, capable of maintaining a fairly uniform steam pressure of 100 to 125 pounds may be used for the work. Heating units, termed super-heaters are usually of the coil type, and are mounted on top of the boiler. The well to be cleaned is first pumped out, and rods and tubing removed. Tubing is made ready for steaming by driving a plug in the end of the bottom section, and perforating that section, six to ten inches above the plug. The pumping barrel is attached so that the lower valve remains about three feet above the perforations in the tubing. Measurements are taken from the bottom of the shot-hole, and when the tubing is returned to the well, it is raised 2½ inches for each 100 feet of pipe, to allow for heat expansion. For greater efficiency, boiler and heating unit are brought close as possible to the well, and connections are made by using 1-inch pipe, from the heater to a valve placed in top of the tubing. When the steam at the point of escape in the heater registers a temperature of 500 to 600° F., the valve in the tubing top is opened so as to allow full pressure passage into the well. Pressure on the boiler is held as nearly as possible around 100 to 125 pounds, while the super-heated steam is inducted continuously for 10 to 12 hours, or until the shot hole fills with fluid and starts to run over. This is usually determined by means of a U gauge. After the shot hole is thus filled, the well is allowed to set for 12 hours, then pumped out and the tubing swabbed. While this pumping is going on, steam in the super-heater is brought up to 500 to 600° F. Connections are again arranged, and raw steam is inducted into the well a second time, by the former procedure, and for a like period, or until the shot hole is again filled with fluid. When a complete filling has been made the second time, the well sets for another 12 hours, then pumped out. These two successive induction periods usually complete the job in most wells, although in stubborn cases, it is sometimes necessary to repeat the process a third, or even a fourth time.

Temperature at the bottom of the average well at the end of a steam-induction period, ranges from 150 to 180° F. Since most paraffin is soluble at 150° F. it can be readily understood that sufficient heat is created to relieve the sand-face of this residue. In addition, the steaming has produced a local softening effect, causing the surface of the sand face to slough off to a considerable extent, thus presenting a more virgin condition. A follow-up cleaning with tools is seldom necessary, except in wells where the shot hole is heavily burdened with sand or muck. Response to oil and gas production rise in steam-cleaned wells is almost immediate, and rate of production increase compares favorably with any other established cleaning method.

Where casing is set on rubber packers, the tubing, when the steam is being inducted should be wrapped for several feet below and above the packer with asbestos paper or pipe covering, otherwise the packer may buckle because of the heat. In wells having considerable uncased hole, it is also advisable to wrap the tubing through the open stretches, because heat has a tendency to cause caving of certain formations. Many operators likewise make it a rule to wrap as many sections of the tubing as possible, especially when steaming deep sands; the purpose being to conserve heat. On numerous tests, bottom-hole temperatures have been raised 15 to 25 percent by this wrapping practice. Pipe covering can be bought at around 27 cents per three-foot length, including clamps, and the same wrappers may be used over and over again.

Costs of steam-cleaning depend, of course, upon condition of well, size of shot hole, depth, etc., but generally range from $50 to $130 per well. Practically all the materials needed, however, can be accumulated from local sources. The steaming process can be varied to suit conditions, having been proven adaptable by repeated tests on sands of any depth, and in various types of sand bodies. Steam cleaning is effective in either producing wells or wells being made ready for secondary recovery. The method is in no way complicated, and the process can be carried out successfully by the average lease crew.

☆ ☆ ☆ ☆ WASHINGTON ROUNDUP ☆ ☆ ☆ ☆

ISSUANCE by WPB of the long-pending Preference Rating Order P-98-c, as the basis for a new materials redistribution program, authorization by OPA of a 25-cent increase per barrel in California heavy crude prices so as to boost fuel oil output, revision by OPA of Petroleum Price Schedule No. 88, to straighten out some difficulties in the way of setting tentative prices for crude at the well, and laying out of plans for another intensive investigation by the oil group of the House Interstate and Foreign Commerce Committee, were the major developments of the week in Washington. Chairman Clarence F. Lea will personally direct the subcommittee survey formerly headed by William P. Cole, Jr.

There were, however, a number of minor events, including the disclosure that PAW is hopeful of providing expanded fuel oil supplies for the East Coast next winter, provided military requirements are not too over-powering. Currently, though, the situation has not improved, East Coast inventories continuing to dwindle during March and closing the month at a very critical level, indicating that the military drain remains heavy.

The California office of PAW may shortly be made practically autonomous, with sufficient authority to decide problems on the spot. Plans for such action are under consideration, and it is possible the same system may be applied to other PAW district offices with the idea of speeding up decisions and actions.

Order Issued Increasing Price of Heavy California Crude

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PWA Issues Long-Awaited P-98-c Preference Rating Order

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New Carrying Facilities to East May Meet Fuel Needs Next Fall

»

Real Facts of Oil Situation to Be Sought by Investigation

»

By B. F. LINZ
Washington Correspondent

☆ ☆ ☆ ☆

OPA Authorizes 25-Cent a Barrel Raise In California Heavy Crude Prices

As a stimulant to increased production of residual and low gravity crudes on the Pacific Coast, badly needed by the navy and war industry, OPA on March 26 authorized an increase of 25 cents per barrel in Maximum prices. At the same time, the ceiling on West Coast asphalt was increased $1.40 per ton to reflect the higher crude price, but the price for domestic fuel oil will remain unchanged.

OPA's action will result in substantially increased income to California refiners, it was said, and a study has been undertaken of the refined oil prices on the Pacific Coast with a view to a proper readjustment in the price of lighter products. It was pointed out that California crude represents the only large reserve of oil in the Pacific area not now controlled by the Axis, with the result that stocks in storage are being drawn on heavily, with much greater needs anticipated in the future, and the increase in price is expected to develop a substantial increase in production by permitting producers a fair return on capital invested in new wells and inhabilitation of old ones.

The new schedule increases the maximum price of crude with a gravity of 15 degrees API and below by 25 cents a barrel. The maximum price thus obtained in a given field also applies to all gravities of crude above 15 degrees for which prevailing maximum prices are below the adjusted maximum for 15-degree crude.

It was explained that the maximum for 15-degree crude in the Signal Hill field of 68 cents per barrel now goes to 93 cents, but the price for 17-degree crude was only 76 cents and therefore the maximum price for crudes of 17 degrees and over, which formerly were under 93 cents, is raised to the latter figure.

The increase on residual retail prices applies to California, Washington and Oregon. A special schedule will be issued for each of the California fields, it was said.

Commenting on the OPA order, acting Administrator Davies expressed the belief that it will make possible the rehibilitation of hundreds of existing oil wells, will encourage a great deal of remedial work in other wells and should stimulate new wells. "When PAW on January 30 recommended an advance in price for crude, we did so because we were so deeply aware of the need for enormous quantities of heavy fuel oil," he said. "It was evident to this office, on the basis of careful studies by our staff and committees of the industry that because of increased production of crude, advances were necessary to increase production."

Davies emphasized, however, that the action on California crude has no relation to the over-all increase recommended by PIWC and is "without prejudice to that issue."

OPA officials said that while California heavy has been under a disadvantage, producers and refiners of lighter crude have enjoyed a good market and supplies have been plentiful. A study of refining costs is nearing completion and adjustments in prices for lighter products will soon be made, presumably downward, to extend the price increase to the lighter oils it was pointed out, would merely have increased profits to that extent.

Tank Car Shipments 807,879 Barrels Daily

Tank car shipments into the East Coast during the week ended March 20 averaged 807,879 barrels daily, a decline of 6138 barrels from the preceding week, according to the PAW report.

Amended P-98-c Order Provides Basis for New Materials Redistribution Program

The long-awaited amended Preference Rating Order P-98-c (THE OIL WEEKLY, March 1), simplifying and concentrating all controls over materials inventories in the industry, was issued by WPB March 23.

The amended order, which PAW officials concerned with its writing said would promote the free flow of materials within the industry, defines "surplus" material, provides a method of accounting for transfers of material from domestic to foreign operations and establishes participation on and after May 1 in a "PAW materials redistribution program No. 2" as a prerequisite to securing any materials for use.

The materials redistribution program is now being drafted and will be announced in the near future, it was said.

In the new order, "surplus material" is defined as any material which is not required for use by the owner during the succeeding 90 days, and all operators are prohibited from acquiring, for use in the United States, its territories or possessions or in the Dominion of Canada, any materials which would result in the accumulation of more than a 90 days' supply.

This limitation, plus the requirements of

the materials redistribution program, it was said, takes the place of the inventory control requirements previously imposed by Priorities Regulations Nos. 1 and 13, and by Controlled Materials Plan Regulations Nos. 2, 5 and 6. Inventory control requirements of Preference Rating Order P-98-b will be revised in accordance with the provisions of P-98-c.

The order requires the filing of Form PD-470 with PAW as a prerequisite to the acquisition by operators from other operators of materials from within the United States for use outside the country, its territories or possessions. This, it was explained, will permit the keeping of an accurate record of the materials transferred from the operating stocks of the United States to foreign operations, and the records of the Lend-Lease Administration and Board of Economic Warfare will reflect all material moving to foreign operations.

Subject to the 90-day limitation on the size of inventories, sales or transfers of material from one operator to another may be made freely up to May 1, next, provided the material is to be used in the United States, its territories or possessions. On and after May 1, however, operators will be required to hold serial numbers obtained under the materials redistribution program, and no operator may obtain material from another operator or apply priorities assistance to obtain material unless he holds a serial number.

Interpretations Clarify Well-Spacing Rules

Employes of well-drilling contractors driving to drilling operations where a breakdown has occurred may secure deliveries of gasoline outside the hours in which filling stations are permitted to remain open, under an interpretation of the order issued by PAW.

Such a trip, it was held, constitutes an emergency involving properly within the meaning of the order and deliveries of gasoline outside of the regular hours of operation may be made.

Several other recent interpretations have been announced by Justin R. Wolf,

Text of Preference Rating Order P-98-c

As Amended March 24, 1943

Section 1041.3 *Preference Rating Order P-98-c* is hereby amended to read as follows:

To facilitate sales of idle or excess materials, equipment and facilities by persons engaged in the petroleum industry to other persons engaged in the petroleum industry and to control the acquisition of materials by persons engaged in the petroleum industry, the following Order is deemed necessary and appropriate in the public interest and to promote the national war effort:

§ 1041.3 *Preference Rating Order P-98-c*

—(a) *Definitions.* (1) "Operator" means any person to the extent that he is engaged in the petroleum industry.

(2) "Surplus material" means any new or used item of material (including without limitation equipment and facilities) usable for purposes other than scrap which is not required or scheduled for use during the succeeding 90 days.

(3) All other definitions of Preference Rating Order P-98-b shall apply in this order.

(b) *Sales of material between operators.* (1) Notwithstanding the provisions of Priorities Regulation No. 1, as amended from time to time, any operator may sell or transfer to any operator material from the seller's or transferor's stocks or inventories, and any such sale or transfer shall be expressly permitted within the terms of Priorities Regulation No. 13, as amended from time to time.

(2) Notwithstanding the provisions of Priorities Regulation Nos. 1 and 13, as amended from time to time, any operator may sell or transfer to any supplier, for direct sale or transfer by the supplier to another operator, material from the stocks or inventories of the operator.

(3) Where any material is to be used by an operator outside of the United States, its territories or possessions, no operator may sell, transfer or accept delivery of such material under the provisions of this paragraph (b) unless Form PD-470 is filed with the Petroleum Administration for War prior to any such sale or transfer. For the purposes of this subparagraph Form PD-470 will be treated as an information form only and not as an application.

(c) *Restrictions on acquisition and use of materials.* (1) The provisions of CMP Regulation No. 2 and paragraph (f) of CMP Regulation No. 5 shall not be applicable to the sale, delivery, or transfer of material or the use of implementing documents under the provisions of this order. The following provisions of this paragraph (c) shall apply.

(2) No operator or supplier may deliver to any operator, and no operator may accept delivery of, any material for ultimate use in the United States, its territories or possessions, or the Dominion of Canada, in a quantity which if accepted by the operator would result in surplus material for that operator.

(3) No operator may submit a contract or purchase order, effect a sale or transfer authorized by the provisions of paragraph (b) of this order, or apply or extend priorities assistance to obtain delivery of any material for ultimate use in the United States, its territories or possessions or the Dominion of Canada in a quantity which if accepted by the operator would result in surplus material for that operator.

(4) On and after May 1, 1943, no operator who is required to obtain a serial number under the provisions of the PAW-Materials Redistribution Program No. 2 may submit a contract or purchase order, effect a sale or transfer authorized by the provisions of paragraph (b) of this order, or apply priorities assistance to obtain delivery of any material unless such serial number has been assigned and is in effect prior to such submission, sale, transfer or application of priorities assistance and the serial number is clearly identified upon the contract, purchase order or other document used in completing the transaction.

(5) Any operator or supplier may deliver to any operator, and any operator may accept delivery of, material for ultimate use outside of the United States, its territories or possessions, or the Dominion of Canada only where the operator accepting delivery of such material secures priorities assistance in conformity with the provisions of Priorities Regulation No. 9 and Forms PD-311 or PD-311-c, as they may be amended from time to time.

(d) *Participation in Materials Redistribution Program.* Where any material is to be used by an operator in the United States, its territories or possessions, such operator shall file such applications as are required by the PAW-Materials Redistribution Program No. 2 and shall participate in such program to the extent required by its terms and provisions. Any operator required to obtain a serial number under the provisions of the PAW-Materials Redistribution Program No. 2 may be deprived of priorities assistance where a determination has been made that such operator has surplus material which he has not made available for redistribution in accordance with such program.

(e) *Communications and appeals.* (1) All reports which may be required to be filed hereunder and all communications concerning this order shall, unless otherwise directed, be addressed:

(i) By any person located in the United States, its territories or possessions, or elsewhere other than the Dominion of Canada to: Petroleum Administration for War, Interior Building, Washington, D.C., Ref.: P-98-c.

(ii) By any person located in the Dominion of Canada to: Office of Oil Controller, Dominion of Canada, Toronto, Canada, Ref.: P-98-c.

(2) Any person affected by this order or the applicable provisions of Part 1 of the PAW-Materials Redistribution Program No. 2, who considers that compliance therewith would work an exceptional and unreasonable hardship upon him, may file an appeal with the Petroleum Administration for War, setting forth the pertinent facts and the reasons such person considers that he is entitled to relief. Such appeal shall be made by filing a letter in triplicate with the Director of Materials, Petroleum Administration for War, Interior Building, Washington, D.C., Ref.: P-98-c. Action with respect to this order and the PAW-Materials Redistribution Program No. 2 may thereupon be taken as is deemed appropriate.

(f) *Applicability of orders and regulations.* Except as provided in paragraph (c) (1), this order does not authorize acquisition, receipt or use of any material by any person in violation of any inventory, quota or use restrictions imposed by any order or regulation. This order and all transactions affected thereby are subject to the applicable provisions of any regulation issued by the War Production Board, as amended from time to time.

(g) *Violations.* Any person who wilfully violates any provision of this order or who wilfully furnishes false information to the Director General for Operations in connection with this order is guilty of a crime, and upon conviction may be punished by fine or imprisonment. In addition, any such person may be prohibited from making or obtaining further deliveries of or from processing or using material under priority control and may be deprived of priorities assistance by the Director General for Operations.

Issued this 24th day of March 1943.

CURTIS E. CALDER,
Director General for Operations.

assistant chief counsel of PAW, including one of considerable importance dealing with well spacing.

The ruling was issued on a question by an operator as to whether the definition of the phrase "uniform well-spacing pattern" in Amendment No. 3 to Conservation Order M-68 requires the formation of a square drilling unit in order to enable an operator to drill without obtaining an exception under the order.

"This operator has been advised that Conservation Order M-68 and its amendments, particularly Amendment No. 3, does not require an operator to form a square drilling unit in order to enable drilling to proceed without obtaining an exception," Wolf said. "However, the operator was also advised that Amendment No. 3 fosters and encourages the formation of square drilling units. In addition, the operator was cautioned that even though the order did not require the formation of a square drilling unit, nevertheless, other requirements of the order, pertaining to the location of the well on a drilling unit in terms of distance from lease lines and other wells, must be observed at all times."

Wolf disclosed that the question has been raised of a possible conflict between M-68 and Preference Rating Order P-98-b with Utilities Order U-1 (formerly P-46) with relation to the operations of natural gas companies.

In the near future, he said, a conference will be held between representatives of PAW and the WPB Office of War Utilities, looking toward the drafting of a memorandum to all natural-gas companies which will clearly delineate the lines of demarcation between Utilities Order U-1 and various PAW orders.

He called attention to the new definition of natural gas producer in Utilities U-1, which has for its purpose a clear statement of the fact that the production and gathering of natural gas are subject to the limitations of Orders M-68 and P-98-b, while its transmission and distribution are subject to the restrictions of U-1; it is intended, he said, that this distinction shall carry forward to a natural-gas company's use of materials for those respective operations.

OPA Issues Revised Crude Price Rulings

Tentative prices set for crude at the well by seller and buyer, and incorporated in an agreement, may be made retroactive when approved by OPA, it was announced March 24.

The approved price, it was said, may be made effective on the date of the agreement or as far back as February 2, 1942, the effective date of Price Schedule No. 88, whichever is later. Heretofore, when tentative prices were approved by OPA they became effective only on later sales.

A number of changes were announced in an amendment to the price schedule, effective March 30, among them the following:

Either seller or purchaser may set a tentative maximum price when the ceiling cannot be established by a posted price or an actual sale on October 1, 1941. Previously only the purchaser could set the tentative price. The retroactive clause, however, is reserved for cases where both seller and purchaser have agreed upon the price, subject to OPA approval.

OPA specifically reserves the power to set a substitute price in lieu of a tentative price submitted for approval. Hitherto, this power was not expressly reserved.

Exact information which should accompany an application for approval of a tentative price is outlined, to include (1) the tentative price; (2) an explanation of why it is impossible to determine the maximum price by taking the October 1, 1941, posted price or an actual-sale price on that date; (3) a description of the available transportation facilities; and (4) a description of the gravity, characteristics, and source of the crude affected.

Similar provisions are made for the tentative pricing of crude purchased at points other than the receiving tank. Previously the ceiling was based on the differential existing at such points over the maximum price for the crude at the well on October 1, 1941, and where no October 1 differentials existed as a guide, tentative differentials could be established previously by both buyer and seller, subject to OPA approval. The amendment now permits only the seller to establish the differential in the absence of an October 1, 1941, differential. The seller must file a request for OPA approval within 10 days and give (1) the tentative differential; (2) an explanation why it is impossible to determine the maximum price at the particular point by utilizing October 1, 1941, differentials; (3) the location of the crude source and the delivery point; and (4) an itemized statement of the cost of transporting the oil from receiving tank to delivery point and of any other items comprising the tentative differential. If OPA does not disapprove it, or substitute another, within 30 days of filing, it stands as the maximum differential. Where seller and purchaser agree upon a differential, OPA can, when approving it, make it retroactive to February 2, 1942, or the date of the agreement, whichever is later.

Lea Committee Investigation to Cover General Situation of All Oil Phases

An immediate investigation of the current situation is to be taken by the Oil Subcommittee of the House Interstate and Foreign Commerce Committee, it was announced by Chairman Clarence F. Lea of California, following approval by the House of a resolution continuing the group's activities through the current Congress.

Lea announced that he personally will head the subcommittee, which he took over during the illness of former Representative William P. Cole, Jr., and continued after Cole resigned to become a judge of the customs court.

Other members of the group are Congressman Lyle H. Boren of California, Martin J. Kennedy of New York and Oren Harris of Arkansas, Democrats; and Charles A. Wolverton of New Jersey, Pehr G. Holmes of Massachusetts and Clarence J. Brown of Ohio, Republicans.

Lea also announced that Secretary of War Stimson has loaned the subcommittee the services of Colonel John H. Leavell, a former oil producer in Oklahoma and the southwest, to act in an advisory capacity.

Within the next few days, the subcommittee will open its investigation with a hearing behind closed doors on the question of increased production of products for military purposes, and will follow this up early in April with extended public hearings at which various government officials concerned with oil problems and members of the industry will be invited to testify.

"It is not the purpose of the committee to confine the hearings to specific subjects," Lea said. "The committee, however, will take up such matters as the necessity of greater and sustained production for the supply of both civilian and military needs; the question of handicaps to production, including the effect of price ceilings; the need of incentive to stimulate discovery efforts and further developments in oil production; transportation as it affects the supply of petroleum and petroleum products for both civilian and military needs; and the extent to which administrative agencies of the government are anticipating and probably providing for sufficient production and supply of petroleum products.

"The committee also plans to go in to the provisions made for the supply and transportation of fuel oil and petroleum products to the East Coast, particularly as to the sufficiency of the plans for such supplies for next winter."

Investigate Independent's Position

The Lea group will not be running the only oil investigation next month, however, as Representative Wright Patman of Texas, chairman of the Special House Committee on Small Business has scheduled three days or more of hearings, beginning April 14, on the producing situation, with special reference to the causes of the decline in wildcatting, at which representatives of the industry have been invited to testify, as well as PAW and other officials.

Patman explained that his committee wants to obtain a "comprehensive view of the oil supply situation in national terms," adding that the smaller operators are not responding to the appeals of Ickes and other officials for more exploratory work and that "representations to members of Congress indicate that there are grave ommissions in the national program of emergency regulations which prevent the exertion of the necessary effort on the part of the small producers who usually have found most of the new oil sources in any given year."

Florida Canal Opponents Say Lines Will Supply East With Fuel Oil Next Winter

Completion of the two large pipe lines now under construction, expansion of water shipments and maintenance of rail traffic at its present level may make it possible for PAW to give Eastern consumers all the fuel oil they need next winter.

Possibilities that the additional 50,000 barrels a day necessary to eliminate rationing would become available were disclosed by Deputy Administrator Ralph K. Davies in testimony before a House appropriations subcommittee during hearings on the Florida barge canal.

To eliminate gasoline rationing, however, it would be necessary to transport an additional 200,000 barrels daily over the approximately 1,600,000 barrels to be moved to meet military and civilian demand, Davies said.

During his testimony, Davies revealed that RFC is expected to absorb all of the additional cost of moving products by rail, instead of only that portion of the excess not covered by the two-cent price increase which is going into the transportation pool, which will be abandoned shortly, resulting in a readjustment of the price structure.

Davies and other officials of PAW, together with representatives of the War Department, WPB and other agencies, appeared before the subcommittee in opposition to the Florida canal, which proponents claimed could be built in 10 months at a cost of $44,000,000.

They took the position that the canal itself would not solve the problem and that the additional materials required for barges and motive power would be more expensive than pipe lines, an added drawback being the lack of skilled manpower to handle the traffic.

Cost of Labor

Figures on construction of the two long-distance pipe lines showed that an average of 3000 men were employed on the Texas-Norris City leg of the big-inch, which required 445,240 man-days, and the construction labor cost of the $35,000,000 project was $12,250,000. An average of 5,000 men will be required for the second leg of the line, which will take 650,000 man-days to build, and the labor cost will be $21,000,000 out of a total of $60,000,000.

The Texas-Indiana leg of the 20-inch products line will require an average of 3500 men and take 420,000 man-days, construction labor costing $15,400,000 of the total of $44,000,000, and to carry the line to the coast will necessitate a similar number of men and the labor cost will be $10,850,000 out of a total of $31,000,000.

Davies was questioned at length by members of the subcommittee as to the disposition to be made of the pipe lines after the war, with indications that some members believe that Ickes, in concentrating on such lines, has in mind federal control.

The deputy administrator denied that the question of federal regulation has entered into the picture and, while no decision has been made as to the disposition of the lines he held the belief that they might be purchased by a group and operated as a straight-out transportation project.

"Do you know whether the chief interest of the Secretary in this matter of the construction of additional pipe lines, with the use of hundreds of thousands of tons of steel and other critical materials, is based on or somewhat on the philosophy of the necessity of government control of the distribution of the oil resources of the nation?" he was asked by Representative Starnes of Alabama.

"I would say definitely that that does not enter into his calculations at all," Davies replied. "His sole interest here is to do a war job and get oil from Texas to the Atlantic Coast as fast as that can be done. And if in getting it here the pipe line is the fastest way of getting it, he is for the pipe line, and for only that reason."

However, Starnes commented, there is no question that if the pipe lines are used in the post-war period the government necessarily would be controlling the distribution of the major portion of the oil resources of the nation unless private enterprise is able to build up tanker fleets and use other methods of transportation that will compete with them on somewhat a level of equality.

"Certainly the government will have control over a very important operation," Davies admitted. "However, the legislation has given some protection on that score in that it does require that the government divest itself of these pipe lines within a given period."

Corn Shortage Threatens Synthetic Rubber Program

Alcohol producers, who a week ago were saved from having to suspend operations by action of the Commodity Credit Corporation in releasing government-held corn, are again facing difficulties which threaten to imperil the synthetic rubber program, it was disclosed March 24 at a meeting of WPB officials with the industrial alcohol producers "advisory" committee.

The last reserves of corn at the disposal of CCC are rapidly disappearing, it was explained by Dr. Walter G. Whitman, assistant director of the WPB chemicals division, and since the corporation is making no further contracts for corn after April 1, a number of alcohol producers will be threatened with shut-downs as soon as its supplies are exhausted.

Whitman said the alcohol section of the chemicals division fully understands the crisis threatening war alcohol supplies because of the inability of distillers to buy corn in the open market, and pointed out that plans to take care of the huge demands for synthetic rubber in the fall were based upon a continuously increasing rate of alcohol production, which rate is now endangered.

WPB Chairman Donald M. Nelson, it was revealed, has appealed to Secretary of Agriculture Wickard and Economic Stabilization Director Byrnes for assistance in solving the problem of obtaining corn for industrial alcohol. It did not appear, however, that any success has attended these efforts as yet.

May Make California PAW Office Autonomous

Plans to make the California office practically autonomous, in order that problems of the area may be worked out on the spot, are being perfected by PAW and are expected to be put into effect in the near future.

Because of the distance from Washington and the peculiar problems of state, it has long been considered desirable to vest as much authority as possible in the California office, and a strong organization of men has gradually been assembled with that in view.

Deputy Administrator Davies has had the matter under consideration for some time, believing that the best interest of the industry can be served by making all of the district offices as independent of Washington as possible.

If the reorganization of the functions of the California office are revamped, it is possible the same system, with some modifications, may be applied to the other district offices.

Davies to Sign Oil Exception Orders

All actions on appeals or exceptions taken under War Production Board conservation and limitations orders affecting the oil industry (M-68, M-68-c, L-56 and L-70) will hereafter be issued over the signature of Deputy Administrator Davies under an agreement between WPB and PAW designed to speed up administration of the orders.

The shift of control under these orders to PAW is in line with the policies worked out by the two organizations in accordance with the President's order setting up the administration in place of the old coordinator's office.

Presidential Order Gives Davies Broader Powers

Expanding the authority to be given the deputy administrator under the provisions of his order setting up PAW, President Roosevelt issued another Executive Order March 24 permitting Ickes to appoint a deputy administrator (Davies) and delegate to him the power and authority to act in all cases.

The new order, it was explained, is merely a technical move designed to give the deputy administrator broader powers than he could exercise under the original designation.

OPA Has New Fuel Oil Rationing Head

Resignation of John G. Neukom as chief of the fuel oil rationing branch and appointment of Laurence C. Vass as his successor was announced by OPA March 23.

District 3 Wants Oil Handled by Industry

The General Committee of District 3 has recommended that the Petroleum Administration for War turn over to the oil industry the job of buying and selling petroleum and its products for transportation through the "big inch" pipe lines now operated by the government.

The request was transmitted to Ralph K. Davies, deputy administrator for PAW, after a meeting in Houston March 25.

In effect, the committee asked the government to revise its present plan of operation. War Emergency Pipe Line, Inc., acting as agent for the Defense Supply Corporation, is operating the 24-inch carrier and is buying the oil f.o.b. Longview, Texas, and selling the oil f.o.b. Norris City, Illinois.

The purchase and sale of oil and its products by War Emergency Pipe Line, Inc., involves serious difficulties, the committee contended and believes the difficulties can be avoided. If the oil industry were enabled to handle all arrangements in the purchase of oil and products, thus preserving long-established relations between buyers and sellers.

Oil-industry officials declare the limiting of the government to physical operation of the big-inch line, as well as the projected products line, with the oil industry assuming the financial and other burdens incident to the sale of oil, is consistent with the basic plan behind the creation of PAW.

With the government entering the picture as buyer and seller of petroleum for the big-inch, the government becomes the largest single purchaser and marketer of oil and its products since it is estimated that the two lines together will be able to deliver approximately 550,000 barrels of oil and products daily to the Atlantic Seaboard. It was pointed out that the operation of both the oil carrier and the products line is of great importance to the industry in District 3.

The recommendation was drawn with all committee members present. Charles F. Roeser is general chairman; George A. Hill, Jr., chairman of the production committee; N. C. McGowen chairman of the natural gas and natural gasoline committee; J. Sayles Leach chairman of the marketing committee; John W. Newton chairman of the refining committee, and Harry C. Wiess chairman of the transportation committee.

South Texas Oil Starts Moving Through Oklahoma

Movement of high-gravity crude by direct pipe line from Corpus Christi district via the Mid-Continent to Middle Western and Eastern refining centers was started March 24 by Sinclair Refining Company through the conversion of the Mexia-Houston portion of its system into a two-way carrier. Company finished testing on above date a 26-mile 12-inch loop, extending north from Sinco terminal to Huffman station, where connection was made with its looped 8-inch system, thus permitting the movement of 20,000 barrels of oil from Corpus Christi district to Oklahoma and points north and east. The company will continue to pump crude from the East Texas and Long Lake fields via Mexia to Sinco through a 12-inch that parallels the converted combination 12- and 8-inch system.

Big Inch Now Shipping Over 200,000 Barrels Daily

Shipments via the War Emergency Pipe Line, Inc., 24-inch carrier from Longview to Norris City, have been stepped up to a peak of 210,000 barrels daily. Movement is due to climb to 300,000 barrels daily about mid-April, providing additional booster stations are completed on schedule.

An initial movement of 320,000 barrels of heating oils has been booked for April, and this fuel will be routed through Pan-American Pipe Line Company's converted 10- and 12-inch trunk line between Texas City and Longview. Five 80,000-barrel steel tanks will be available at Norris City terminal to receive this heating oil. Provisions have been made for the movement of 3,875,000 barrels of heating oil during May along with an aggregate of 5,250,000 barrels of high gravity crude.

Auto Association Opposes Gasoline Price Increase

Declaring that all segments of the industry have been given special government assistance in one form or another and that gasoline now available is "decidedly inferior" to the pre-war product, the American Automobile Association went on record March 24 as firmly opposed to the request of the industry for a nation-wide increase of 1 cent per gallon.

In a letter to PAW Ickes, AAA President Thomas P. Henry asserted that the increase would cost the public $100,000,000 a year.

At the same time, he urged prompt expansion of pipe-line facilities to serve the East Coast and the restoration of coupon values in the Eastern shortage area to the national level. Following completion of the 24- and 20-inch lines, he said, PAW should consider the feasibility of an additional line to serve the New England area.

"Since the government is now subsidizing the petroleum industry to the extent of around $300,000,000 a year to meet increased transportation costs to the Atlantic Seaboard," he said, "and since greater savings have accrued through the limitation of hours for gasoline sales and through the prohibition of the sale of gasoline on credit, and since motorists are operating on gasoline that is decidedly inferior to the pre-war fuel, PAW and OPA should refuse to grant at this time the request of PIWC calling for a nation-wide increase of 1 cent a gallon in the price of gasoline which, if granted, would add nearly $100,000,000 a year to the fuel bill of American motorists."

Sun Gets "M" Pennant For Building Tankers

Production last year of 46 badly needed tankers and cargo vessels well in advance of construction schedules has won for the Sun Shipbuilding and Dry Dock Company, Chester, Pennsylvania, the U. S. Maritime Commission's "M" pennant and Maritime flag, and for its workers merit badges.

Kerosine Shipping Costs Plan Extended to July 1

Defense Supplies Corporation will continue to absorb the increased cost of shipping kerosine into the north Atlantic states in steel drums for another three months, it was announced March 25 by Secretary of Commerce Jesse E. Jones.

The original program for government absorption of the extraordinary costs was to expire April 1, but because of the continued need for kerosine in the New England area will be continued until July 1, Jones said.

Relax Restrictions on Fuel Oil Use

Restrictions on consumption of fuel oil for non-heating purposes by commercial and industrial consumers in the Eastern Seaboard shortage area will be lifted April 1, with the approaching end of the heating season.

Under the order only the most essential industries were permitted to obtain their full requirements of fuel oil for non-heating purposes during the first three months of this year, less essential consumers being cut 40 percent.

Liquefied Petroleum Gas Committee Is Appointed

Formation of a liquefied petroleum gas industry committee to act in an advisory capacity to the War Production Board has been announced.

Paul K. Thompson, chief of the liquefied petroleum gas unit of the plumbing and heating division, is Government presiding officer of the committee, the membership of which includes: L. Abramson, Petrolane Gas Corporation, New Orleans; P. A. Anderson, utilities distributors, Portland, Maine; George W. Bach, Skelly Oil Company, Kansas City, Mo.; M. L. Baker, Standard Oil Company (California), San Francisco; Kenneth H. Koach, Green's Fuel, Inc., Sarasota, Fla.; F. B. Boice, Shell Oil Company, New York; G. L. Brennan, Warren Petroleum Company, Tulsa; John Clark, Standard Oil Company of New Jersey, New York; W. T. Joplin, Butane Corporation, Phoenix, Ariz.; W. A. Naumer, Carbide & Carbon Chemical Corporation, New York, and C. D. Whitfield, Phillips Petroleum Company, Washington, D. C.

Atlantic Will Extend West Texas Line

Atlantic Pipe Line Company has been authorized by PAW to extend its West Texas system from Grand Falls district, Ward County, to the Abell field, Pecos County, using 9 miles of 6-inch and 8 miles of 4-inch salvaged pipe. This extension line will terminate at Magnolia Petroleum Company's tank farm and gathering station in the Abell field, and will handle crude produced and purchased by the latter for consignment to Magnolia Pipe Line Company at Wink, Texas. Crude produced from the Ordovician horizon in the Abell field yields toluene and other war products.

API Told California Faces Hard Task Supplying Oil

Before a packed house of California oil men, Herbert R. Gallagher, newly appointed director in charge of PAW District 5, indicated that plans are in the making which will mean a new setup in the administration of California oil affairs preliminary to a greatly accentuated effort to produce more oil on the West Coast.

The meeting, which was largely in the nature of a symposium on the manner in which the West Coast division of PAW operates, was held Tuesday evening in the Biltmore Bowl in Los Angeles and brought attendance from all over the state.

Carl Young, general secretary, Division of Production, A.P.I., said that California is looking at the bottom of the barrel of supply and that it will require a real effort to supply the oil.

Gallagher, in his prepared talk, referred to the peculiar nature of many California operations, and the need to operate in California in the light of these conditions rather than in the light of conditions throughout the rest of the United States. Reference was made in his speech to decentralization of PAW affairs, and when asked to elaborate on this after his speech, he said that the plans for this decentralization are "in the hopper" at Washington.

He also said that Ralph Davies had instructed the issuance of a new "M-68." Due to heavy demands on the part of the navy and other armed services, California's need for oil is increasing and Gallagher said that he hoped that the drilling campaign now in prospect for California would be the heaviest undertaken in many years.

In the course of the very interesting presentation of the procedure followed by PAW in handling California allocations and production, W. R. Wardner, manager of the California Conservation Committee and a member of the symposium panel, pointed to the increase already in progress in California drilling. He said that during the period under consideration 29,000 barrels of oil had already been added to California production from oil wells brought back to life. He said that in only 41 California pools is output restricted below the maximum efficient rate and expressed the opinion that raising these pools to the maximum efficiency producing rate would add only 10,000 barrels per day to the state's output.

All pools producing crude with 46 percent fuel oil content under present refinery operating conditions are now on a full maximum efficiency operating basis, he indicated the probability that all wells will be put on maximum efficiency producing basis shortly.

API Eastern District Announces Program

Planning its forthcoming meeting around an all-out cooperation to win the war, Eastern District, API Division of Production, has announced a preliminary program to be held in the William Penn Hotel, Pittsburgh, Pennsylvania, April 8-9.

On April 8, the morning session will open with M. G. Gulley, of Gulf Oil Corporation, presiding. The address of welcome will be given by the Cornelius D. Scully, Mayor of Pittsburgh, followed by a response by Gulley. Then will follow a talk on "The Business of War," by Ralph T. Zook, president of Sloan & Zook Company.

Presiding over the afternoon session will be R. B. Anderson of Columbian Carbon Company. There will be a period given to business sessions and chapter reports, presided over by M. G. Gulley, chairman of the Eastern District.

Three papers will be given in the afternoon, including: "Future Oil and Gas Supply in Eastern United States," by R. C. Tucker, West Virginia Geological Survey; "Natural Gas Situation in Industrial East," by H. J. Wagner, Chief, Gas Section, West Virginia Public Service Commission; and "Stand-by Fuel Services in Industrial Plants," by Dr. Rolla Miller, Peoples Natural Gas Company, and Carl V. Spangler of J. F. Pritchard Company.

Included in fellowship events is the Victory dinner on the evening of April 8, and an open house on Wednesday evening, April 7, with the Engineer's Society of Western Pennsylvania, as host.

Petroleum Association to Change Meeting Set-Up

In an effort to cooperate with the government to reduce the demand upon railroads and other agencies of transportation, National Petroleum Association is changing the character of the semi-annual meeting to be held in Cleveland, Ohio, April 15 and 16.

Trustees will meet on the above dates at the Cleveland Hotel, in Cleveland, and desire that each member company have one representative present. This procedure will reduce attendance to a fraction of the number who would normally attend the meeting, and will make possible important round-table discussions with government officials directly related to the war effort.

Texas Bill Regulates Labor Union Operation

Regulation of Texas labor is provided in a bill now on the desk of Governor Coke Stevenson. The bill passed both houses last week, despite efforts of organized labor to defeat it. Sponsors felt sure the Governor would approve the bill.

The measure provides for registration of labor organizations with the Secretary of State. Officers of the organizations must be listed, but the principal purpose of the bill is covered in that section which requires that income and expense be accounted for. Information filed will be available to the attorney general, to grand juries and other law enforcement agencies.

Many observers believed this bill was the first move in a series of steps to control activities of irresponsible labor leaders.

The bill limits fees to be charged by unions, and forbids union charges for "work permits."

Texas Pipe Line Bill Before Sub-Committee

A bill requiring pipe lines to take full allowables set by the Texas Railroad Commission, has been amended and referred to the House sub-committee on oil and gas. The amendment limits the take required to the capacity of the line.

Representative Harley Sadler is author of the bill and chairman of the sub-committee. His purpose in submitting the bill is to prevent selective buying through pipeline proration. Its passage would be especially helpful to the West Texas area from which Sadler comes.

Statewide Hearing to Question Waste in Arkansas

A statewide hearing before the Arkansas Oil and Gas Commission has been called for April 6 to determine whether there is waste of oil or gas now taking place within the state, or if such waste is imminent.

Also at the hearing, applications for drilling in the gas fields of Dorcheat, Macedonia and McKamie will be received.

Geological and engineering reports on the Cotton Valley sands and Smackover limestone formation in the three gas fields mentioned above, will be heard, and evidence on the advisability of unitized production program in the three fields will be presented.

The hearing is to be held at Magnolia.

Unitized Production Under Consideration in Louisiana

An application for unitized operation of a 658-acre tract of leases in the Logansport, Louisiana, gas field, is under consideration by Commissioner Joseph L. McHugh.

The commissioner is also reviewing an application by The Texas Company, to govern dual completions of wells in the Erath field.

Arkansas to Study Secondary Recovery

Approval of the Byrd bill by Homer H. Adkins, governor of Arkansas, releases $5000.00 to be spent by the Arkansas Oil and Gas Commission in the study of the advisability of applying secondary-recovery methods to old South Arkansas fields.

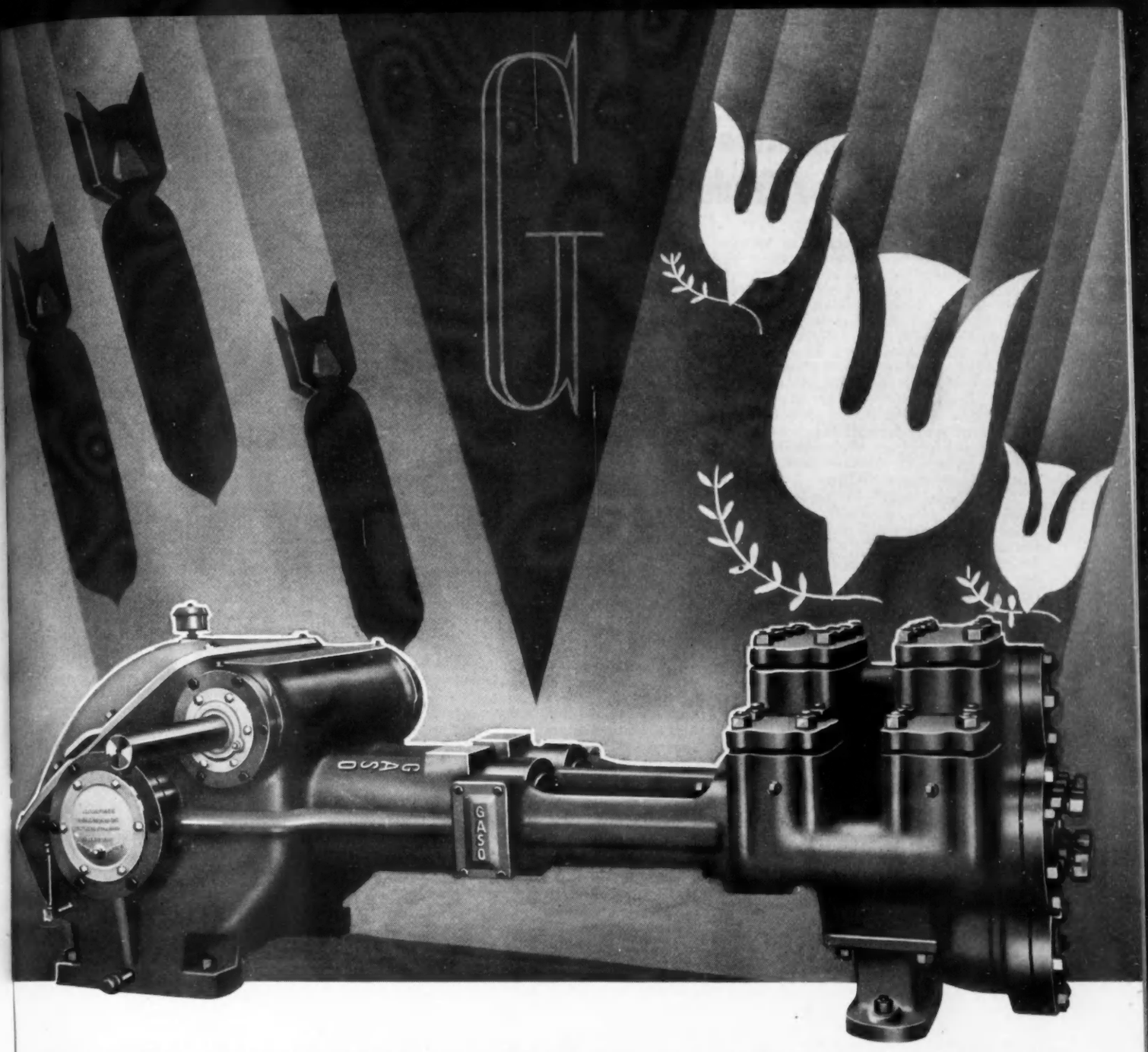
Secondary Recovery Bill Killed in Oklahoma

Progress of secondary recovery legislation in Oklahoma received a decided setback this week when the Oklahoma legislature killed the Batson bill, by House vote. The measure would have provided two methods of secondary-recovery operations: one by unanimous consent, the other by a one percent ownership affirmation.

Opposition to the bill was vigorous and was promoted by royalty owners and members of the Stripper Well Association. Both groups were motivated by the feeling that chief benefits of the bill would fall to the larger corporations. The provision that the corporation commission of the state be given additional powers of authorization in allowing secondary-recovery projects to be developed was also a sore spot.

Kansas Adopts PAW Figure for Allowable

An April production figure of 309,900 barrels daily has been set by Kansas Corporation Commission in session March 23, this corresponding with the PAW recommendation. At the hearing it was pointed out that during February, production reached a sustained all-time high of 310,228 barrels daily. T. A. Morgan, head of the conservation department, offered the recommendation that the minimum allowable be raised from a currently applicable 20 barrels daily to 25 barrels daily. The suggestion is to be further considered.



HOW TO MAKE YOUR GASOS STRETCH FROM WAR TO PEACE

Breakdowns in pumping equipment may under present conditions result in costly delays or even inability to replace the unit that fails. That's reason aplenty for instituting a special wartime program of conservation . . . The following suggestions are designed to help you in getting out of your Gaso Pumps all of the trouble-free service that has been built into them.

1. **Keep pumps clean.**
2. **Change lubricant in crank case at least twice a year. Use an SAE 90 EP Gear Lubricant in crank case, and an SAE 30 Motor Oil for roller bearings that have separate housings.**
3. **Adjust bearings at first sign of looseness.**
4. **Do not overload pump.**

While our facilities are at war, our thoughts are still on peacetime customers; and we stand ready to do anything in our power to assist them in the job of conserving existing pumps until such a time as we are able to provide the new and even better models which will emerge from the expanded facilities and broadened experience of wartime service . . . Gaso Pump & Burner Mfg. Co., 902 E. First Street, Tulsa, Oklahoma. Export Office: 149 Broadway, New York. Los Angeles: Service Oil Field Supply Co., 5333 S. Riverside Drive.

GASO PUMPS

FOR EVERY OIL INDUSTRY NEED

District 2 Committee Reviews Production Loss in Plea for Crude-Price Increase

Faced with an ever-increasing supply problem of its own brought about by steadily rising demands of the armed forces, the oil industry may soon find itself unable to take care of calls made upon it without seriously impairing reserves. Certainly it will have to push itself to new exploratory efforts in an attempt to restore and maintain production equal to the demand, and this effort, normally difficult, becomes more so because of a scarcity of materials, because of a shortage of manpower and because the price of crude oil has not been permitted to advance as have the prices of other commodities.

Thus Chairman O. D. Donnell summarized the general situation in his talk before the District Production Committee, of District 2, which held its March meeting in Tulsa, recently.

Trends for District 2 comprising Oklahoma, Illinois, Indiana, Kansas, Kentucky, Michigan, Nebraska and Ohio, follow closely those prevailing elsewhere, namely: declining output, decreasing reserves, and insufficient drilling to make up for these declines.

From January to September inclusive, 1941, the district showed an upward tendency. From September, 1941, to the present, however, the curve has been downward, almost continuously. Production has dropped from 1,200,000 barrels per day to less than 1,000,000 barrels per day, or more than 200,000 barrels.

A corresponding slump in crude-oil stocks has been persistent, 59,000,000 barrels being the total at the end of January, this year, as compared with 97,000,000 barrels in January, 1941. The serious drain upon the district as a whole is indicated by this 38,000,000,-barrel decline in stocks over a 24-month period.

Slight irregularity is shown in drilling statistics for the district, with two upward trends recorded between January, 1941, and the present: From January to October, 1941, there was a slight upsurge of activity. Beginning in October of that year, the trend dipped sharply, but swung upward again in March, 1942. From March to July the increase continued, but the situation reversed itself during the last half of last year and the decrease was continuing through January, this year.

In spite of the fact that two pivotal states, Oklahoma and Illinois, are included in District 2, wildcatting for 1941 and 1942 resulted in no substantial new discoveries. Drilling for new discoveries varied little for the period, with a monthly average of 128 wells in 1941, and 131 in 1942.

Committee members decided that the downward trends are probably due to both restrictions on drilling and development activities and to lack of manpower, the latter factor being one of the most serious drawbacks now confronting the industry. Many small producers, if forced to the 48-hour week without any compensation for overtime payments, will be forced out of business. This observation is substantiated by results already felt by small independents (THE OIL WEEKLY, March 22) many of whom have already sold properties because of the burden in trying to operate them to make expenses, much less a profit. The seriousness of this situation can hardly be over-emphasized, because of the important influence heretofore exerted by independent operators on the oil business. "Small producers are vitally important to the industry because of the exploratory and wildcatting activities which they have carried on in the past," Donnell stated.

Donnell further stressed the problem of reserves, particularly the misconception which has arisen in the minds of the public and apparently of many connected with the government that reserves are easily and quickly available as production. Declaring that the important factor in this consideration is not the amount of reserves, "but rather the daily productive capacity," and he urged "that it is this capacity which the committee felt is in danger of decreasing to the point where it will seriously hamper and interfere with this country's participation in the war."

The question of an adequate price was a recurring topic during the meeting and was generally accepted as the most essential factor with relation to the prevention of shutting down of marginal wells, premature abandonment of wells, and acceleration of secondary-recovery operations and exploratory drilling. No further action was taken on the matter however, inasmuch as there is a specific recommendation before PAW recommending an increase of 25 cents per barrel in the ceiling price of crude oil, and also since the committee has given repeated attention to the effect of price on production operations since October, 1941.

The application of secondary-recovery methods as a means of increasing production, has been considered constantly by the committee since its organization in 1941. As a result of action taken at the first meeting in July of that year, preliminary surveys were made indicating that substantial increased quantities of daily production could be made available if some effort could be exerted which would materially increase that type of operation. To further study in this connection, the committee has decided to appoint subcommittees to determine what in the judgment of the operators themselves might be expected in the way of additional oil through secondary recovery on the basis of a higher crude price.

The committee went on record as favoring a review of the promulgation of Conservation Order M-68 as it applies to District 2. It has been recognized by the Production Division of PAW as well as the industry committees that a more efficient operation and increased production in certain areas of the country would result from exceptions to the 40-acre spacing rule required under the order. Adjustments have already been made in a few states, and it is the opinion of members of the committee that PAW would be justified in making exceptions to M-68 to provide closer spacing of wells where it could be shown that such closer spacing would result in more efficient operations, increased production, and at the same time a proper use of critical materials.

Illinois Resolution Asks Increase of Oil Price

Moving to join Texas and Oklahoma in petitioning Congress to raise the OPA ceiling price on crude oil, the oil conservation committees of the Illinois House and Senate have approved a resolution to that end as an "incentive to stimulate discovery of new fields."

At a joint meeting, the committees gave the resolution full approval and sent the measure to the Senate for passage.

The resolution made no recommendation as to how much of an increase over the present ceiling price of $1.37½ a barrel should be granted. A suggestion that the price be boosted to $1.50 a barrel was rejected when one legislator asserted "a 13-cent increase in the ceiling price would not be sufficient to spur production of oil."

Senator John J. Parish, whose home is in Centralia, the center of Illinois' oil fields, voted against the resolution with the statement that "independent oil companies can make plenty of money at $1.37½ a barrel."

Parish said that he made a "terrible mistake" in defeating an oil-conservation bill in 1939 and added "I understand that Governor Dwight Green will submit another oil-conservation bill at the present session of the assembly and I am one Democrat who will be for it."

"Some incentive to stimulate discovery of new fields is urgently needed and raising the ceiling price would provide such incentive by inducing prospectors to expand their operations if assured this opportunity for obtaining a reasonable return on their investments," the resolution reads.

Mississippi Oil and Gas Board to Protest Price

The Mississippi Oil and Gas Board will be convened by Attorney General G. L. Rice to protest alleged discrimination in the price paid Mississippi producers for crude oil under OPA freezing orders.

Gladewater Area Gets Second Salt-Water Plant

Installation of a second salt-water-disposal plant to serve the Gladewater area of the East Texas field has been announced by the East Texas Salt Water and Disposal Company. The system will serve the area south and west of Gladewater, in the Chote, Dillard and Hokit surveys.

Contract for drilling the well has already been let. Construction of concrete gunite pits will be started immediately and pressure filters will be moved in within the next few days. Asbestos-cement pipe for transporting the water from various leases to the disposal well is on hand and preliminary surveys have been completed. Approximately two weeks will be required for construction of the pits and drilling of the well.

This is the second salt-water-disposal system in the area, the other system serving the Augustine, Goodwin, Thompson-Allen and Evans surveys on the Phillips-L. J. Everett lease.

Larger Production of Residual Fuel Oil Almost Supplies Current Heavy Demand

In reflection of increased production and refinery processing of crude oil, the industry fairly well balanced current production of refined products with the demand for them in the week ended March 20, and stocks reacted favorably. There was a further draft on stocks of light fuel oils, but the withdrawal was normal for the season; and only a relatively small reduction occurred in the scant stocks of residual fuel oil, as production of that product was stepped up. Production of gasoline was somewhat larger than in the previous week but the extra output was absorbed and the industry took from storage the small amount of 2000 barrels.

Withdrawal of 887,000 barrels of gas oil and distillate from storage left stocks at 31,742,000 barrels, only 548,000 barrels or 1.6 percent under the total of 32,290,000 barrels reported for March 21, 1942. A fairly satisfactory stocks situation for the light fuels prevails, therefore, although potential demand is greater than a year ago because of more oil burners being in use. The reduction in stocks was accounted for only in small measure by curtailment of production, which was 57,000 barrels less than in the preceding 7 days. The week's production of 3,822,000 barrels was 161,000 barrels or 4.3 percent in excess of that in the corresponding week a year ago.

The industry as a whole took from storage 65,000 barrels of residual fuel oil in the week ended March 20, and that withdrawal occurred in spite of the fact that production at refineries was 167,000 barrels greater than in the previous week. Stocks stood at 68,178,000 barrels at the end of the week, 15,847,000 barrels or 19 percent under the level of 84,025,000 barrels as of March 21, 1942. The week's production of 7,312,000 barrels was 968,000 barrels (15.2 percent) larger than that of 6,344,000 barrels in the 7 days ended March 21, 1942.

Stocks of finished and unfinished gasoline in the United States totaled 94,159,000 barrels on March 20, down 2000 barrels from a week previously, although production during the week was 190,000 barrels greater than in the preceding 7 days. The new rate of production was 8.6 percent below that a year before, a decrease relatively smaller than the decline which has occurred in consumption of gasoline, under rationing. Present stocks of gasoline are nearly 14,000,000 barrels, or almost 13 percent, below those held a year ago. This decrease is fairly well in line with the curtailment of demand.

U. S. Stocks of crude oil totaled 236,655,000 barrels on March 20, up nearly a million barrels for the week but 25,000,000 barrels (9.6 percent) less than a year previously.

In running to stills an average of 3,618,000 barrels of crude daily in the week ended March 20, the industry processed 39,000 barrels per day more than in the previous week and 39,000 barrels daily or 1 percent more than in the corresponding week last year. This increase over a year ago reflects fairly well the comparatively heavy demand currently for all oils, with requirements

Crude Oil Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	*State Allowable of Crude Production	PRODUCTION IN WEEK ENDED March 20	March 27
Arkansas	72,337	70,900	70,850
California	780,200	780,150	800,300
Long Beach		33,700	33,250
Midway-Sunset		56,200	59,450
Kettleman Hills		45,350	45,300
Wilmington		96,150	95,350
Rest of State		548,750	566,950
Colorado		6,500	6,550
Illinois		228,950	228,650
Salem		30,900	30,600
Louden		42,000	39,900
Other New Pools		144,650	146,600
Old Pools		11,400	11,550
Indiana		14,850	13,400
Kansas	304,900	315,400	308,900
Kentucky		12,750	12,950
Louisiana	326,648	340,000	340,100
North		89,250	89,050
South		250,750	251,050
Michigan		61,000	54,200
Mississippi		57,650	53,450
Missouri		95	95
Montana		19,700	18,500
Nebraska		2,300	2,100
New Mexico	100,000	92,450	92,450
New York		14,550	15,300
Ohio		11,300	11,350
Oklahoma	360,900	342,450	345,650
Oklahoma City		57,900	59,200
Seminole Area		79,100	79,500
Rest of State		205,450	206,950
Pennsylvania		45,000	45,800
Tennessee		35	35
Texas	1,383,376	1,393,750	1,393,350
Upper Gulf Coast		353,850	352,850
East Texas Field		323,250	323,750
Rest of Eastern Texas		100,200	100,050
Lower Gulf Coast		104,900	106,050
Southwest Texas		50,700	50,700
South Central Texas		17,000	17,100
West Texas		218,250	217,050
North Texas		136,900	136,950
Panhandle		88,700	88,850
Utah		10	10
West Virginia		9,100	9,950
Wyoming		91,300	93,550
Total 8 Prorated States	3,387,511	3,396,100	3,351,600
Total United States		3,910,190	3,917,490

* Details on state allowable in Oil Weekly of March 15, page 44.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

ITEM	Crude Oil Prod. Barrels Daily	Crude Oil Prod. Week Ended	Runs to Stills Barrels Daily	Runs to Stills Week Ended	Crude Stocks Barrels	Crude Stocks Week Ended	Gasoline Stocks Barrels	Gasoline Stocks Week Ended	Gas Oil & Distillate Stocks Barrels	Gas Oil & Distillate Stocks Week Ended	Residual Fuel Oil Stocks Barrels	Residual Fuel Oil Stocks Week Ended
Highs:												
1939	3,910	8- 5	3,650	10-21	278,607	5-26	87,769	4-22	39,562	10-28	116,237	8-26
1940	3,890	3-16	3,690	6-22	265,865	8-31	102,817	4-20	49,051	10-19	109,135	9-14
1941	4,337	11-22	[1]4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	[1]4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	49,861	11-14	95,857	1- 3
1943	3,904	3-20	3,734	1- 2	236,655	3-13	94,159	3-20	42,913	1- 2	72,881	1- 2
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 8
1940	3,335	11-30	3,370	1- 6	237,339	1-27	79,847	11- 9	23,551	4- 6	102,344	2-10
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-13	232,191	1- 9	82,420	1- 2	31,668	3- 6	68,178	3-20

Trends in Week Ended:	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gas Oil and Distillate Production Weekly	Gas Oil and Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1942:									
January 3	4,038	3,961	244,440	13,797	92,987	3,855	49,357	6,918	95,857
January 31	3,871	3,848	250,740	13,292	97,810	3,817	40,674	6,640	91,189
February 28	4,016	3,675	259,373	12,131	105,635	.....	34,547	.....	88,285
March 28	3,820	3,667	263,208	11,663	105,624	.....	31,756	.....	83,045
April 25	3,581	3,506	257,073	10,535	102,897	.....	29,240	.....	81,107
May 30	3,877	3,522	255,023	10,478	95,355	.....	31,384	.....	79,628
June 27	3,719	3,581	253,364	10,713	88,396	.....	32,851	.....	77,304
July 25	3,691	3,658	249,262	10,864	82,281	.....	35,966	.....	77,816
August 29	3,964	3,697	249,007	11,300	80,831	.....	42,060	.....	78,034
September 26	3,909	3,802	242,785	10,954	80,550	.....	45,945	.....	78,943
October 31	3,901	3,731	239,266	11,153	79,159	.....	48,131	.....	79,166
November 28	3,878	3,736	234,850	11,269	78,854	.....	49,739	.....	77,796
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 6	3,887	3,626	235,686	10,058	92,845	3,731	31,668	7,106	68,782
March 13	3,877	3,579	236,655	10,071	94,161	3,879	32,629	7,145	68,243
March 20, 1943	**3,904**	**3,618**	.....	**10,261**	**94,159**	**3,822**	**31,742**	**7,312**	**68,178**
March 21, 1942	3,692	3,579	[4]262,063	11,235	107,926	3,661	32,290	6,344	84,025
Change:									
In week	+27	+39	+969	+190	—2	—57	—887	+167	—65
In year	+212	+39	—25,408	—974	—13,767	+161	—548	+968	—15,847
In year	+5.7%	+1.0%	—9.6%	—8.6%	—12.7%	+4.3%	—1.6%	+15.2%	—18.8%

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks, March 14, 1942.

of fuel oils, aviation gasoline, and other products more than compensating for decreased use of gasoline.

Crude oil production is up relatively more than crude runs above year-ago trends, as the country now is depending more exclusively on domestic fields for needed crude, while it also is taking requirements direct from wells instead of drawing on crude storage for part of the needs as was the case last year. Crude production averaged 3,904,000 barrels daily in the week of March 20, up 27,000 from the previous week, and a new high for this year. The new rate was 212,000 barrels (5.7 percent) above the 3,692,000 barrels per day produced in the week ended March 21, 1942.

Pronounced Scarcity Still Features Fuel Oil Markets

Pronounced scarcities of all grades of fuel oils continue to feature the markets, although it is to be expected that supplies of heavy-fuel oils and kerosine will be eventually stimulated in consequence of recent revisions of prices of those products by OPA.

Some refiners still had not advanced prices of kerosine at the middle of the past week, pending study of OPA's Amendment 82 to Revised Price Schedule 88, which was made effective March 17. However, in accordance with that order, practically all suppliers in the East Coast district had advanced their prices 3/10 cent a gallon. Even at the higher prices, however, there were still shortages of kerosine at most Eastern points. On the Gulf Coast, some refiners expressed dissatisfaction with the amount of the increase authorized in kerosine prices.

The industry has become fairly well adjusted by now to the new gravity-scale prices permitted for residual-fuel oils, and sales are being made on the new basis. Under the new schedule, the prices range from $1.09 per barrel for 16-16.9-gravity fuel to $1.27 for 25-gravity and above.

Milder weather has alleviated somewhat the general scarcity of lighter fuel oils, although supplies still are hard to get, with transportation difficulties importantly responsible. In the Mid-Continent, refiners remain several days to 2 weeks behind on shipments of distillates, having no storage from which to draw and therefore being able to supply only material currently produced. Distillates and range oil also are especially scarce in the Middle West.

There is still difficulty in adequately supplying war-production plants as well as other industrial users of residual-fuel oils in the East Coast district; and for meeting the demand, efforts are being made to obtain supplies from as far away as Oklahoma and Kansas, although refineries in those states have very little if any to offer, because of delivering large quantities to the railroads under contracts. Substantial quantities have been sold, however, on the Gulf Coast within the past 10 days, at the new gravity-scale prices, for tanker shipment. Middle Western industrial plants continue to experience difficulty in obtaining enough of the heavy-fuel oils.

Gasoline remains in good demand generally. Although current consumption is not heavy, comparatively, it is anticipated by some refiners and marketers that demand is due to increase materially, and some of them look for higher prices as well as tighter supplies. In the Middle West the demand currently is showing gradual increase, in reflection of spring agricultural requirements, and pronounced strength of the market is expected within a few weeks, when the weather becomes warmer.

Markets for lubricants are generally firm in all districts, including Western Pennsylvania, where there has been further strengthening of neutral oil, the only product which has shown any weakness in recent months.

Thompson Urges Higher Crude Prices

High prices for crude oil to furnish the incentive for new discoveries are urged by Railroad Commissioner Ernest Thompson. In a prepared statement issued last week, Thompson said that "the present low price of crude came about at a time when there was free play of price from the effect of supply against demand. There was plenty of oil available. There, the price stabilized itself at the low level of around $1 per barrel. Then when price fixing came into being under OPA, oil prices were pegged at these inordinately low prices. Since that time the cost of operating has increased in every way.

"The cost of deeper drilling mounts constantly and no consideration is given to the cost of discovering oil in (these) particular areas. It is significant that we are consuming just about twice as much oil as is being discovered. I do not mean that we will run out of oil this year. The rub will be felt in 1945 or 1946. It is an axiom in the oil business that the price of oil today controls the rate of discovery three years hence.

"It certainly behooves the administration to permit the price of crude oil to increase to the level of prices of other basic commodities. To do this would mean an increase of at least 50 cents per barrel.

"If further proof be needed, one has only to read the daily papers and see where independent operators are in increasing numbers, being bought out by the major companies.

"The predicament of West Texas operators is particularly bad, since the refiners are refraining from using the sour crude. The Commission is today sending a letter to all refiners who operate in Texas asking them if their refinery is now using any sour crude, and if so, what amount; whether their refinery is equipped to use sour crude, and if so, how much; whether their refinery is located so that sour crude would be available to it under existing pipe line facilities; and (whether they) would be willing to use sour crude in their refinery and under what conditions.

"These questions are asked with a view to getting a complete understanding, if possible, of why it is that sour crudes cannot be used in the refineries that are equipped to use this type of crude."

Tank Car Shipments East Decline Slightly in Week

Some decrease in railway tank car shipments to the East Coast District occurred in the week ended March 20, when movement averaged 807,871 barrels per day, compared with 814,107 in the previous week. Tank cars loaded totaled 26,181, compared with 26,380 the previous week.

Box car shipments in drums increased to 24,293 barrels per day, from 19,861, as cars loaded rose to 675 from 559.

Texas April Allowable Slightly Under PAW Figure

The Texas Railroad Commission's April proration order provides daily production estimated at 1,500,342 barrels, approximately 500 barrels less than the figure for March, and 1658 barrels below the recommendation of PAW. Most fields will be producing 19 days.

Numerous allowable changes were ordered, especially in Southwest Texas and the Gulf Coast. Old Ocean was raised from 13,794 to 15,674, and Bay City 2016 to 2500 barrels daily. The other Gulf Coast changes were cuts ordered for fields which could not make allowables assigned.

Greta was raised from 591 to 4839 barrels, Heyser 8114 to 8986 barrels, Benavides 1996 to 3563 barrels, and Hoffman 3589 to 5691 barrels.

Luby was raised from 3008 to 3694 barrels, Piedre Lumbre 1224 to 1900 barrels, Saxet 2061 to 5042 barrels, and East White Point from 9629 to 11,055 barrels per day.

The shutdown program is outlined below:

27 producing days: District 2—La Rosa and West Ranch; District 3—Lovell's Lake, Amelia, Sugarland, Clear Lake and Webster; District 4—Orange Grove, Garcia, Rincon and Tom Graham; District 8—Yates; District 9—Antelope (Mississippi Lime), Bonita, Chapman-McFarlin, Clingingsmith, Hapgood, Hoefle, Kadane, Kadane Shallow, Mankins, Mueller, Ringgold, Sanders, Scotland, Scotland (Miss. Lime), Wilson, Forestburg, Worsham-Steed, and Rock Crossing (Ellenberger).

24 producing days: Alice and Magnolia in District 4; Bay City in District 3; Estes in District 8.

23 producing days: Emperor and Waddell in District 8, and the Panhandle field.

21 producing days: Hoffman and Ben Bolt in District 4; Foster in District 8.

20 producing days: Slaughter in District 8; KMA in District 9.

16 producing days: Wasson, Abell Permian, North Cowden Deep and South Cowden in District 8.

15 producing days: O'Hern in District 4; Abell in District 8.

Exempt from all shutdowns:

District 1—Darst Creek, Imogene, Loma Alta, Luling - Branyon, Pearsall (Navarro Sand), and Salt Flat.

District 2—Cordele, Heyser, Mellon Creek, Mission River, Oakville, Plummber, Victoria, Collier, Mustang, Poth, and Tynan and Fagan.

District 3—Arriola, Bammel, Barbers Hill, Batson New, Beaumont West, Boling, Buckeye Clay Creek, Conroe, West Conroe, Cotton Lake, Cotton Lake South, Damon Mound, Danbury Dome, Esperson Dome, Eureka Heights (D), Goose Creek, High Island, Hitchcock, Hull, Humble, Humble Light, Kubela, Livingston, Lochridge, Louise, Mercy, Magnet-Withers, Manvel Oligocene, Markham, Mykawa, Mykawa New, North Dayton, Orange West, Raccoon Bend Shallow, Raccoon Bend Cockfield, Sandy Point, Stowell, Silsbee, Turtle Bay, Thompson South, West Columbia New, Old Ocean, North Withers, North Bay City, Bucksnag, Danbury Dome (5655 foot Sand), Hampton, Livingston (Sparta Sand), Livingston (Wilcox Sand), West Silsbee, South Buckeye, and West Columbia.

District 4 — Boyle, Charamousca, Casa Blanca, Clara Driscoll (3800-ft Sand), Guerra, Kelsey, Eagle Hill, Minnie Bock, Moca, Nichols, Seven Sisters, Sam Fordyce, North Sam Fordyce, Taft, Plymouth, White Point, East White Point, Cadena, East, Quinto Creek, and Dulup.

District 5—Mexia, Powell, Richland, Sulphur Bluff, and Wortham.

District 6—Boggy Creek, Cayuga, Hawkins, Kildare, Lone Star, Larissa, Pittsburg, Quitman, Talco, and Rodessa.

District 7B — Grogan, Eastland County, Erath County, Loving County, Park Springs, Prichard, Reddin, Reddin Frazier, and Stephens County, Merkel and Hill.

District 7C—Beddo, Big Lake, and World and Winters.

District 8 — Hendricks, Howard-Glasscock, Iatan, East Howard, McKee, Robertson, Jamison-Pollard, Leck, Monroe, Taylor Link, Snyder, Welsh, and Embar Permian, Monahans, Kermit, Russell.

District 9—Cooper, Johnson Pool in Cooke County, Fargo, KMA Ellenberger, Hildreth, Hults-Owens, Joy-Mississippi Lime, Antelope, Bogtsberger, Walnut Bend, Padgitt (Mississippi Lime), Burns, Ragland (Mississippi Lime), Knox (Mississippi Lime), Illinois Bend, Holbert Caddo, and Murray and Ellis.

International Developments

Venezuela Plans Expansion Of Oil-Refining Industry

New petroleum legislation sponsored by the government and submitted to a special session of the congress of Venezuela has as one of its important aims the expansion of refining within Venezuela.

When the legislation was submitted, President Isaias Medina told the congress that the measure would enable Venezuelan oil refineries to increase their daily output greatly within five years after the war. The increase would make Venezuela an outstanding refining, as well as producing, country, he said.

Because of Venezuela's desire to build up refining, the government is expected to exempt refinery equipment from import duties, although the proposed legislation will not make such exemptions generally on equipment and materials imported for oil development.

Although Venezuela's oil production has risen to a peak of about 800,000 barrels per day (in early 1942), the country has refining capacity for only about 110,000 barrels daily, mostly in three plants, having from 30,000 to 40,000 barrels daily crude charging capacity each, and only one of the plants having cracking equipment.

Tax Concessions Offered To Boost Drilling in Canada

Oil men at Calgary, Alberta, state that tax concessions to companies developing Alberta's oil resources and to investors in oil royalties probably will speed up development in 1943.

A difficulty in obtaining private capital for drilling wells in 1942 was that unless the well proved an exceptional producer, heavy income taxes made it problematic whether the initial investment would be recovered in a reasonable period.

As a consequence most of the development during the last six or seven months has been undertaken by the major oil companies who have surplus funds on hand.

New tax concessions "should go a long way towards speeding up new development and exploration work and public funds will now likely be attracted," said B. L. Thorne, president of Alberta Petroleum Association.

California Standard Sets Up New Canadian Company

Standard Oil Company of California has set up Dominion Oil Company, Limited, with John Galloway as executive vice president.

Operating headquarters of the company will be at Calgary, Alberta. The directors will include J. M. Kirby, chief geologist; R. T. Wilson, secretary and treasurer; and W. H. McLaws, legal counsel.

Standard Oil Company of British Columbia will continue to handle the importation, refining and marketing of petroleum in British Columbia.

L. N. Hamilton, president of the two companies, is taking a leave of absence to represent certain of Standard Oil Company of California's foreign interests in Washington, D. C.

Turner Valley Gas Being Returned to Formation

Conservation board officials at Calgary, Alberta, said that for the first time in the history of Turner Valley field, waste gas which would otherwise be burned in flares is being returned to formation through an agreement with the Anglo-Canadian Oil Company in connection with its Frontier, Sundance and Prairie producing wells.

While the immediate effect is to permit more efficient operation of the wells involved, a general adoption of the plan would, some believe, boost pressure in the Turner Valley reservoir with a favorable effect on ultimate recovery.

Methane Gas Pipe Line In Italy Near Completion

In reflection of Italy's extreme shortage of fuels under war conditions, increased utilization of methane gas is planned.

Axis press reports have stated that the large methane pipe line in the Italian Department of Emilia is due to be finished soon. With its branch lines the system will be about 168 miles in length. The first section, from Milan to Piacenza, already is in operation.

The system will provide 40,000 cubic meters of methane gas daily under pressure of 200 atmospheres. One half of the gas handled will go to Milan, 6000 cubic meters to the town of Reggio, 6000 to the town of Lodi, and 8000 to Parma.

The system is owned and operated by the State Methane Company, Azienda Generale Italiana Petroli, and other companies.

More Rumanian Rail Tracks To Aid Nazi Oil Shipments

Possibly reflecting to some extent the burdens placed on Rumania's railways by petroleum being moved to Germany, substantial railway development is planned for Rumania, according to the British trade press. Double tracking of the main lines, to strengthen the supply line to Germany, is under way. Rumania already has about 300 miles of double-track railway lines.

Italians Seek Larger Share Of Rumanian Oil Production

Giving evidence of Italy's desire to obtain a larger share in Rumania's oil production, Axis press reports have stated that the Italian financial group, Montecatini, has acquired all the shares of the Petrolina Company, Ploesti.

That company's capital has been increased from 20,000,000 to 160,000,000 lei (191.30 lie = $1) and likely will further increase capital to 300,000,000 lei. It owns 750 acres of oil land and recently purchased considerable oil field equipment, including 7 derricks, located in Pitigaria from Foraj Lemoine A. G. Ploesti.

Montecatini also has acquired Continentale Petrolifera A.G., Bucharest (capital, 6,000,000 lei), which is exploiting the oil fields in Moreni and Chiuciura, and Xenia A.G., Bucharest (capital, 50,000,000 lei), which owns a refinery in Ploesti.

Gulf Sets Up Fellowships In Eleven Universities

Gulf Oil Corporation has announced the inauguration of fellowships in the fields of physics, chemistry, geology, engineering and business administration at 11 of the country's foremost colleges and universities.

Application for these fellowships is open to graduates of recognized colleges and universities and to men or women who, through established training and achievement, are able to demonstrate their preparedness for advanced training. Those interested in qualifying may make application directly to the participating institutions. Complete details of the plan with proper procedure for making application will be given through college publications and scientific journals.

The only condition that in any way limits the schools in selecting a candidate is a provision that if one of the applicants for a fellowship is the child of a Gulf Oil Corporation employe and his qualifications are equal to those of others competing, the son or daughter of the employe shall be given preference.

South Dakota Enacts Oil Drilling Regulation

A measure creating an oil and gas conservation board to control exploratory work and possible production in South Dakota was approved by the South Dakota legislature at its 1943 session and signed by Governor M. Q. Sharpe.

The board will be composed of the governor, attorney general, secretary of state, state treasurer, commissioner of school and public lands and the state auditor.

The state geologist and the state engineer will serve in advisory capacities.

The board will have authority to regulate all oil and gas exploratory work but the measure specifically limits its authority with the provision that it shall have "no jurisdiction to make rules and regulations or orders which restrict or limit production of petroleum, oil or gas in the absence of waste.

The measure establishing the board provides that no wells shall be drilled closer than 200 feet from any adjacent property line or 500 feet from another well on the same property. This provision does not apply, however to core tests or stratigraphic holes.

The law also provides that the board must be notified of plans for drilling of wells and sets a fee of $25 for each well. If a well drilling application is denied, a hearing must be granted to the applicant within 20 days after the application

200 Years Ago . . .

John Harris started something

ABOUT TWO HUNDRED YEARS AGO John Harris was planning the town he later founded, Harrisburg, on the banks of the Susquehanna. Harris was one of the handful of men in the colonies who first realized the necessity of strengthening local defenses — and then did something about it. He wrote repeatedly to provincial and state officials urging increases in both personnel and material for the home guard. To the Revolution, which interrupted his plans for converting "Harris Ferry" to Harrisburg, he gave liberally — without stint — of his time, money, and influence. ¶ He was a strong supporter of our first four-star general, George Washington. To both men, winning the war came first; all else was secondary. At last in 1785 Dauphin County was created and John Harris saw his postponed plans come true. Harrisburg became the county seat. ¶ The spirit of John Harris has never left Harrisburg. His city, and his namesake steel manufacturer, hold winning the war as job Number One! Not weeks or months but *years before Pearl Harbor* a major part of the production of Harrisburg Steel Corporation was devoted to the armed services. John Harris would have approved. He really put us on the track of winning our Army-Navy "E" for excellence in production.

HARRISBURG STEEL CORPORATION

HARRISBURG, PENNSYLVANIA

was made and the decision must be announced within 25 days. All decisions of the board can be appealed to the circuit courts in the state.

The law also provides that well drilling applications must carry the exact location of the proposed well, the names and addresses of the owner, operator, contractor and driller and that the well log, drilling records, drill cutting or cores must be filed with the board within six months after the well is completed.

The board must also be given notice of the intention to drill stratigraphic tests and a plugging report must be filed 60 days after the test is completed. No fee is required, however.

The South Dakota legislature also passed a measure appropriating $25,000 for the payment of a bonus for the first producing South Dakota oil well but the bill was vetoed on a question of constitutionality.

Also approved by the legislature and signed by the governor were measures requiring more detailed oil and gas leases for filing with county registers of deeds, including the post office address of the owner and the legal description of the land and requiring surrender of oil and mineral leases within 15 days after they expire.

South Dakota has been the scene of considerable oil and gas exploratory activities during the last three years. About 7,000,000 acres are under lease in South Dakota and its neighboring state of North Dakota and investigating crews have been active in both states.

Drilling of four wells was begun last summer and work is expected to be resumed on at least some of them this spring.

Natural Gasoline Stocks Up Despite Output Drop

Production of natural gasoline and allied products turned downward in January, averaging only 9,701,000 gallons daily as compared with 10,183,000 gallons in December, it has been announced by the Bureau of Mines.

The decline was the first to occur since last April, the bureau said, and was largely due to outstanding decreases in the Panhandle, Louisiana and Oklahoma.

The detailed figures on light products were as follows: Production of natural gasoline, 157,332,000 gallons against 170,058,000 gallons in December; cycle products, 58,800,000 gallons against 57,834,000 gallons; isobutane at natural gasoline and cycle plants, 12,054,000 gallons against 10,332,000 gallons; liquefied petroleum gases at natural gasoline and cycle plants, 72,534,000 gallons against 77,448,000 gallons; liquefied refinery gas at refineries, 18,438,000 gallons against 20,160,000 gallons.

Demand: Used at refineries, 185,850,000 gallons against 207,018,000 gallons; natural gasoline and cycle condensate to jobbers and retail outlets, 35,826,000 gallons against 37,632,000 gallons; liquefied petroleum and refinery gases for fuel, 48,678,000 gallons against 54,390,000 gallons; exports and losses, 33,012,000 gallons against 51,366,000 gallons.

Stocks increased during the month, both at refineries and plants and terminals, at the former rising from 79,758,00 to 86,730,000 gallons, and at the latter, from 114,786,000 to 119,238,000 gallons.

U. S. Field Operations

Illinois

Two White County Tests Have Oil Shows

E. S. Adkins' Brown 1, SE NE NW 25-7s-2e, Franklin County, a wildcat at the edge of West Frankfort, swabbed 235 barrels of oil in 22 hours following a 500-gallon acid treatment in Lower O'Hara lime at 2756-64 feet and is being put on pump.

Plug was being drilled at Seaboard Oil Company's U. S. Coal and Coke 9, NE NE NE 26-6s-4e, first offset to the company's pool opening Aux Vases well 1½ miles south of the Akin field.

St. Clair County: Eason Oil Co.'s Thomas 1, NE NE NW 4-1s-8w, a wildcat, was abandoned after drilling into St. Peter sand, topped at 2061 feet, to 2174 feet.

Perry County: The Texas Co.'s Matlavish 1, NW SW NE 26-4s-2w, the state's deepest current operation, was abandoned at 4121 feet after topping a dry Trenton lime at 4070 feet. The Trenton carried a light oil show but only 90 feet of drilling mud and no oil were recovered in a 90-minute drill stem test. It is the only test drilled to the Trenton in the county.

White County: Bonnie Heath's Miller 1, SE NE SW 26-4s-9e, a wildcat 3 miles southwest of the Centerville pool, was drilling below 2700 feet after finding a show of oil in Tar Springs sand at 2553-59.

Another wildcat, Duncan's Stokes 1, NE SE 27-4s-10e, 1½ miles northwest of the Phillipstown pool, found a show of oil in Benoist sand at 2888 feet but was drilling ahead at 2980 feet for the McClosky lime.

Oklahoma

Noble County Misener Strike Looking Good

Lake Shawnee, Oklahoma's most recent First Wilcox sand field, may well be defined as a result of wells now nearing the pay. Magnolia Petroleum Company's H. Royalty 1, NW SW SE 28-10-2e, Pottawatomie County, east of the discovery, is running slightly higher than the discovery at the base of the Checkerboard with 1500 feet of hole yet to be made. North of the discovery, Stanolind Oil & Gas Company's Bleeker B-2, NW NE SW 28-10-2e, is at 2500 feet. In the first section to the west, J. E. Crosbie, Inc.'s, Arrington 1, C NE SE 29-10-2e, is nearing the objective with tools below 5400 feet. In the first section south, Stanolind Oil & Gas Company and Amerada Petroleum Corporation's Crossland 1, NW NE NE 33-10-2, is about 5000 feet.

Noble County: A complete test of Atlantic Refining Company's Boulden 1, SE SE SE 12-21-2w, Misener sand field opener in the Perry area, heightens the outlook for the spot by flowing 308 barrels in 24 hours after 1000 gallons of acid. It has since been choked to a daily production of 100 barrels.

Logan County: Layton sand production in Crescent field continues slowly with productive limits of the pay being gradually extended. Last well to add acreage to the development is Sunray Oil Company's Wells 1, SW C NW 26-17-4w, which is running casing to 4970 feet with 12 feet of saturation below the casing spot. No complete test has been made.

Oklahoma County: Ace Gutowsky's Wagner 1, NW C SW 32-14-4w, 3 miles west of Edmond field, found Second Wilcox sand at 7676 feet and found it hard and dry. After drilling on into the sand, it softened up slightly and began a series of tests. Hunton lime, in which shows were encountered in drilling through to the Wilcox, remains a prospective pay horizon in case the lower Wilcox section proves negative.

Lincoln County: Stanolind Oil & Gas Company is testing in First Wilcox sand at Leonard 1, SW C 10-12-2e, with formation top marked at 5635 feet and with hole bottomed at 5641. Failing to recover a core of the section, test of the sand is being made.

Kansas

New Kansas City-Lansing Field in Stafford County

Kansas City-Lansing lime has been found productive in extreme southwest Stafford County at the edge of a broad nosing that reaches into Dodge City Basin (Northern Anadarko) from Central Kansas Uplift. Cities Service Oil Company's Grunder 1, SW NE NE 11-25-15w, is the discovery well which completed for an initial of 46 barrels at 4030 feet. Nearest production is in the Jordan-Kipp area, 9 miles east.

Falcon-Seaboard Oil Company's Spangenberg 1, NE SE 21-22-12w, in the Sittner area, found Kansas City-Lansing saturated favorably between 3445 and 3451 feet. While no test of this stratum will be made immediately, operator anticipates it will commercially produce if the main objective, Arbuckle lime, is found dry.

Decatur County: What at first appeared to be a pool opener is showing increased water in Kansas City-Lansing lime at Helmerich & Payne, Inc.'s, Savage 1, NE NE NE 3-1-27w, only a location south of the Nebraska-Kansas line. After drilling through saturation in the lime to dry Arbuckle with total depth at 3685 feet in granite, hole was plugged back and casing perforated opposite the saturation. Indicated production was very light.

Pratt County: Iuka production area continues to grow with a good completion being made by Skelly Oil Company at Knop B-2, SW SW SE 25-26-13w, which drilled to 4317 feet in Arbuckle lime topped at 4313 feet. On potential test the well flowed 244 barrels in 8 hours through a 30/64-inch choke, to gain a maximum potential of 3000 barrels.

The same operator has announced Knop B-3, SW NE SE 25-26-13w, as a test to the same pay.

New Mexico

Deep Test Logs 450 Feet Ellenburger

R. Olsen Oil Company and Atlantic Refining Company's Langlie 1, ⅝ mile east of Langlie field, and the first Ordovician test for Lea County, failed to indicate production in Ellenburger, topped at 9105 feet, and was halted in granite at 9592 feet with a thin section of granite wash (Cambrian) overlying the basement rock. Electrical formation survey has been run to check on possible producing zones as logged by samples in Lower Permian and Simpson, topped at 8250 feet, elevation 3133 feet, before running pipe. Langlie 1 encountered full section of Ordovician, with top of Montoya at 7970 feet.

Quay County: Stanolind Oil & Gas Company's Fuller 1, C NE NE 25-8n-30e, Frio Dome prospect, failed to reach its Ellenburger objective due to entering granite at 6733 feet, and was abandoned at 6747 feet.

Lea County: Continental et al's Eaves 1-B-31, C NW NE 31-26s-37e, ¾ mile south of production in Eaves field and near the Texas border, cemented 7-inch at 3057 feet after drill-stem test at 3192-3248 feet yielded 600 feet of oil- and gas-cut mud. Tests in upper lime showed dry gas.

San Juan County: Conoco-Stanolind-Standard of Texas' Tocito 1, C NW SW 17-26n-18w, deepest active test in state with Basal Pennsylvanian as its objective, was drilling shaley-lime 6235 feet, elevation 5852 feet.

California

Three New Gas Fields Will Spur Wildcat Work

Two new gas field discoveries, now at varying stages of confirmatory tests, and a possible third, are the currently spotlighted features of California development activities.

A find by The Texas Company in the Mendota area of Madera County, San Joaquin Valley, so far appears to be the most important of the trio, having an aggregate volume from two tests estimated at 15,000,000 to 20,000,000 cubic feet per day. This wildcat, Gill 38-16, also holds some promise of oil or distillate production from higher levels not tested.

Of the other two shows—both in the Lodi vineyards country of San Joaquin County, Sacramento Valley, and only three miles apart—one, Amerada Petroleum Corporation's Lodi Community 9-1, already is conceded rating as a discovery because of gauging approximately 10,000,000 cubic feet daily on formation test. The third try, Bankline Oil Company's Community 1-1, Lodi neighbor of Amerada, topped what appears to be the same kind of pay at 2331 feet.

In both instances the discoveries are in areas where they should bring in wide sweeps of prospective gas territory. Successful completions of the

magnitude promised by these early tests surely would touch off a lot of new wildcatting for dry gas in adjacent country.

The Lodi find likely would start the bigger wildcatting rush for the two reasons that more ground is open thereabouts than in the case of the Mendota discovery, and also that it is extraordinarily shallow drilling. The last interval successfully tested in the Amerada well, deepest to give returns, was 2566-2576 feet; and in the Bankline well the sand which appears to be pay was picked up at 230 feet less depth.

Fresno County: Intervening territory between Helm, Wheatville, Raisin City and Riverside fields, in Fresno County, is coming in for much new wildcat interest, with several projects already under way and three more tries rumored as being ready to start. Of the three, one was officially confirmed this week in Amerada Petroleum Corporation's announcement of preparations to drill Wheatville F 21-18, 8-17-18. Nearest to this site of any area tested in the vicinity is the General Petroleum Corporation's Noble 88-9, 2 miles northwest. It was drilled to 8505 feet without showings, and abandonned.

Kern County: A wildcat with exceptionally interesting possibilities, Chanslor Canfield Midway Oil Company's 78-6, 6-32-23, off the west flank of Midway-Sunset, is being spudded this week. Objective is a fault accumulation corresponding to the Republic Petroleum Company pool ½ mile to the southeast. The Republic pool, less than 80 acres in extent, has yielded more than 11,000,000 barrels of oil since its discovery in 1928.

West Texas

Show Indicates Big Strike In Winkler County

Amon G. Carter et al's Walton-Pure 2-C, C SW NE PSL Section 1, Block B-3, Winkler County, confirmed deep production for the large Keystone structure in producing at rate of 9,000,000 feet of gas daily and 9 barrels of 58-gravity distillate hourly when tester was used in dolomite at 9233-46 feet. Production is from Ellenburger, topped at 9217 feet with elevation of 2955 feet. Owners planned to resume coring, and are reasonably certain that a prolific oil flow will follow upon reaching porous section of the Ellenburger. This test showed possible production at two levels in Clear Fork, and also in Silurian, topped at 7438 feet. Being on the west flank of the Central Platform, it encountered upper (Montoya) and middle (Simpson) Ordovician at 7775 feet and 8185 feet, respectively.

Magnolia Petroleum Company's Walton-State 20, 3½ miles west and involving a deeper-seated structure, was coring shaley-sand at 10,040 feet in lower Tulip Creek, topped at 9720 feet with elevation of 2934 feet. This wildcat yielded 1700 feet of gas-cut mud and kicked mud halfway up the derrick when incomplete 9-minute drill-stem test was made at 9950-70 feet. The tool seat failed after 4 minutes. Drill-stem test at 10,000-10,013 feet recovered 360 feet of slightly gas-cut mud with tool open for 20 minutes, Walton-State 20 entered Simpson at 9460 feet, 1296 feet low to the Keystone deep strike. Negotiations are about complete for Stanolind Oil & Gas Company to acquire Shell Oil Company's Blue 1, east edge of Winkler County, and deepen from 9437 feet to 11,000 feet, or Ellenburger, for half interest in the well and lease block. This wildcat entered Montoya at 9245 feet with elevation of 3098 feet.

Reagan County: Amerada Petroleum Corporation's University 1-R-N, expanded Barnhart field ⅝ mile northwest, swabbing 3 barrels hourly and original bs&w appeared to have been exhausted. Production is from Ellenburger perforations at 9237-71 feet. Acid treatments are due to convert it into a flowing well. Low structural position of this outpost will halt exploratory work to the west, while it is ½ mile north of the only failure in the field. Humble Oil & Refining Company's Sawyer 1-B, projected Ordovician test for a 171,431-acre lease, centering upon Reagan-Irion County line, was drilling black shale at 5520 feet.

Andrews County: Exploration of the Clear Fork 6000-7000-foot section is due to be accelerated in this county as result of the development of attractive high-gravity oil in the Embar and Fullerton fields. Seaboard Oil Company is to start a test shortly on its Munger-Nix lease near the northeast corner of PSL Block A-41, being on direct strike between Fullerton and Embar fields. Plymouth Oil Company is adding to its leases, in PSL Block A-36 with a Clear Fork test scheduled. Similar projects are likely for the Deep Rock pool, and amidst short-term leases in PSL Block A-34.

Hockley County: Jerry Hawkins et al's Mallet 14-B, 1¼ miles north by west of an incomplete extension for the Slaughter field, paved the way for considerable development in swabbing 4 barrels of oil hourly after using 12,000 gallons of acid through perforations at 4850-95 feet, having plugged back from water at 4929 feet.

West Central Texas

Taylor County Well Flows 75 Barrels on Hour Test

Butler-Horne Drilling Company and Geochemical Survey's Hudson 1, southwest offset to a dry hole that preceded discovery of the Reddin pool, Taylor County, flowed 75 barrels on 1-hour test through 1-inch after squeezing off portion of gas found in Lower Hope at 2397-2409 feet. This well passed up a trio of prospective oil zones in order to avoid duplicate completion on a 40-acre unit. The partnership's Zant 1, 2½ miles southwest of Wimberly pool, was drilling at 1880 feet, geological section correlating with nearest production.

Jones County: North American Oil Consolidated of San Francisco has purchased S. C. Herring-Jones & Stacey's Marshburn 80-acre lease, with 2 flowing wells in 2300- and 2400-foot pays, for $60,000 cash and $20,000 payable from production. The California concern also contracted to pay $20,000 from production for the partnership's Hardy 80-acre lease upon completion of one free well. These two leases are in the Wimberly multi-pay pool.

North Texas

Archer-Young Wildcats Showing for Producers

L. T. Burns et al's Turbeville 1-R, southwest corner Block 161, Robt. Carson Survey, 4½ miles northwest of Archer City, yielded sufficient free oil in using tester in sand 1292-1306 feet to indicate a new pool for Archer County. Pipe was cemented on top of sand for completion. It is short distance northwest of Ebnother pool, and nearby failures tend to restrict production possibilities. G. E. Kadane et al's Ferguson-Conoco 1, SE SE SE SP 1, midway of Mankins and Holliday, was drilling at 4260 feet to explore 4500-foot Bend zone and fulfill 4550-foot depth contract after indicating 25 barrels of oil and 75 barrels of water natural from broken sand at 4124-46 feet in Strawn, topped at 4021 feet. An Ellenburger failure ½-mile northwest revealed production possibilities in both zones.

In Western Young County, Fleming Oil Company's Graham 2, SE NW TE&L 2912, 997 feet west of a 4927-foot Ellenburger failure on its 6000-acre block, showed for 5 barrels of free oil daily on swabbing test through casing at 3800 feet, and will be acidized. Production is from Bend, topped at 3798 feet, 9 feet low, and showed saturation in drilling to 3809 feet. Unless the Bend yields flowing production, this wildcat will be carried to Ellenburger on strength of promising lower pays revealed by initial test.

Vogtsberger: Fain & McGaha's Thorman 1, NE C Lot 78, H&TC 11, extended this revised Archer County pool ¾-mile south and on strike between Ellenburger failures, in flowing 80 barrels natural through casing from Strawn 4631-87 feet. Tom Medders et al's Berger 1, between production, filled with oil after 60-quart nitro shot at 4757-4815 feet. Medders and W. D. Cline's Vogtsberger 1, ¾-mile southeast of discovery, entered broken oil sand at 4698 feet, and was drilling broken pay at 4760 ft.

Montague County: Continental Oil Company's W. A. Richardson 1, southwest corner of F. Hamilton Survey and southwest offset to its Mueller pool 7200-foot discovery, established an upper pay in flowing 506 barrels of oil and 52 barrels of acid water on 20-hour test through 1-inch. Flushed casing perforations at 6015-27 feet with 500 gallons acid. Production is from Bend, topped at 6020 feet.

Ellenburger Quartet: Search for oil reserves to replace the depleting supply of Mid-Continent grade oil in the district will be accelerated with the starting of four 5500-foot wildcats in Archer County. All will be carried to Ellenburger, if necessary, but Strawn and Bend zones afford production possibilities. L. T. Burns, dean of the wildcatters in the district, was rigging up for Bishop 1, SWc Block 52, L. & M. Pasture, 3¼ miles each by north of Megargel, and his Wilson 1-A, SW SE ATNCL 107, was drilling at 1870 feet. L. C. Heydrick et al's Carter Bros. 1, NWc Lot 10, ATNCL 97, and Phillips Petroleum Company's Wilson-Luke 1, ATNCL 117, are situated 8½ miles northwest and 6 miles north of Archer City, respectively.

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East Texas

Quitman West Edge Well Has 9 Feet Paluxy

Quitman field expanded to west with well logging.

Stanolind Oil & Gas Company's Tilson 1, projected Paluxy test for the campbell faulted structure in Hunt County, was drilling at 4220 feet in Georgetown lime, topped at 4030 feet, 241 feet low to its junked 6570-foot Travis Peak test, 1½ miles to south.

Quitman Field: Roger Lacy et al's Johnson 1, mile northeast of production, was drilling lime at 5260 feet, having logged Austin chalk at 4055-4240 feet with elevation of 446 feet. It is about 200 feet low on this marker. However, the field is cut by local faults in the chalk series. Shell Oil Company's Goldsmith 3, south outpost, entered Paluxy at 6274 feet, structurally low, and had logged comparatively thin pay in coring to 6320 feet.

Amerada Petroleum Corporation's Blalock 1 expanded the Quitman field ¼-mile west in flowing 166 barrels of oil in 5½ hours through tester with ¼-inch choke on bottom. Production is from perforations at 6330-46 feet in sand, topped at 6204 feet. Additional perforations will be made at 6200-62 feet in the main Paluxy pay, which proved to be unusually thick. This concern will operate leases held jointly with Gulf Oil Corporation et al and initial test for the partnership will be on S. J. White tract, situated east of production. Six or more wells are scheduled.

Wood County: Bobby Manziel et al's Bailey 1, four miles southeast of the Coke field, maintained its favorable structural position in topping Georgetown at 5104 feet, about 200 feet high to intermediate dry hole, and was drilling lime at 5410 feet. Amerada Petroleum Corporation's Turner 1, Lower Trinity test for the east flank of Coke field, was drilling Paluxy at 6440 feet.

Franklin County: Tide Water Associated-Seaboard Oil Company's Bacon 1, Scroggins prospect that passed up 25-foot prospective gas-distillate pay in Rodessa at 7279-7304 feet without test in order to explore Pettit and Travis Peak, was drilling at 7520 feet. The latter zone yields oil in the Pittsburg pool, situated 8 miles southeast.

Henderson County: Stanolind Oil & Gas Company's Tri-Cities 1-B, 1⅜ miles northeast of Tri-Cities pool, was coring Pettit at 8260 feet, and will continue to Travis Peak. Porosity in Rodessa warrants setting pipe to try for completion. The company's Tri-Cities 1-D, ¾ mile southeast outpost and highest structurally, was drilling Rodessa zone at 7760 feet. British American Oil Producing Company's Rodessa discovery produces 50 barrels daily.

Smackover Projects: The Mexia-Talco fault trend has been assigned another Smackover lime test through Sun Oil Company contracting to drill Rutledge 1, E. Parsons Survey, 4 miles north of Elmo and in northeastern Kaufman County. This wildcat is 4 miles southwest of Colton-Lester & Duffield's Barrow 1, which was junked in Rodessa zone at 5968 feet.

Southwest Texas

Three Fields Indicated, Two More Have Showings

Opening of new fields featured development in the lower coastal sector last week. At least three fields are in the offing while other wildcat tests are reported to have found some oil and gas shows and may open new reserves. The discoveries are in Starr, Karnes, and Jim Hogg counties. From a development standpoint Karnes County is leading other areas in the number of wildcats and discoveries so far this year. This territory heretofore was by-passed in drilling programs, but with operators finding gas and distillate and oil in the Wilcox sand the county is rapidly forging to the forefront in the development picture.

Karnes County: The latest indicated strike in this area is Transwestern Oil Company's Sellers 1, seven miles southeast of Runge on a Humble Oil & Refining Company farmout. A drill-stem test in the Pettus sand at 4120-24 feet recovered 200 feet of high-gravity oil in 10 minutes with 1500 pounds bottom-hole pressure and 1650 pounds shut-in pressure. Operators ran electrical survey to 4851 feet before resuming drilling to the Wilcox objective. The discovery is in the northeast corner of block 3, Shaw and Harris subdivision, Victor Blanco grant. The drilling deal originally was worked up by Dan Auld, San Antonio producer.

Another wildcat holding interest in the county is Blanco and Buchanan's

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Nichols 1, four miles south of Kenedy. A drill-stem test was run in hard formation at 5804-10 feet, but failed to show for production. Other sands were logged that carried oil odor but did not yield oil or gas.

Starr County: Ike Howeth et al are testing Caffarelli 1, wildcat four miles northeast of Los Olmos field after running a drill-stem test at 3612-26 feet and recovering 1800 feet of pipe-line oil in 30 minutes through ¼-inch chokes on top and bottom. It is believed the sand is in the Pettus zone. The well is in southwest corner of share 19-C, porcion 80, on Humble farmout. This discovery will increase interest in Baldridge & King's Edgerton 1, wildcat four miles south of Caffarelli 1, four miles east of Los Olmos field.

Extension: Sun Oil Company is extending production one mile westward at North Sun, Starr County. The well is Montalvo 1-B, and on a drill-stem test at 5933-40 feet recovered 900 feet of 43.6-gravity oil with 275 feet of oil-cut mud. The well, projected to 10,000 feet, found the oil sand deeper than any previous production in North Sun area.

Discovery: Potential gauge has been run on Sun's Weil Bros. 3, new discovery 15 miles south of Hebbronville in Jim Hogg County. The well flowed 8 barrels of 45.5-gravity oil daily from perforations at 5003 feet after topping sand at 5002 feet. Total depth is 5183 feet with 5½-inch casing set to 5054 feet.

Texas Gulf Coast

Oil Production Found In Katy Field Extension

Oil development interest is centered on the Katy gas-distillate and oil area of Harris and Waller counties now that the field has been extended three miles northward and oil production opened. This area is rapidly becoming the largest gas-distillate reserve along the coastal sector with all sides of the pool constantly being expanded to add more productive acreage.

Katy: Stanolind Oil & Gas Company has completed Pattison 1, wildcat three miles north of Katy field, as first oil producer for the area. Casing was perforated at 6622-25 feet and flow was 143 barrels of 44.5-gravity oil through ⅛-inch choke along with 315,000 cubic feet of gas. This discovery is due to lead to a considerable flurry in development on this flank. Although the field already embraces approximately 23,000 acres of gas-distillate area, the oil discovery probably will add several thousand more productive acres to the field proper. Stanolind tested three gas-distillate sands deeper in the hole before perforating in the oil sand.

Operators in the field and PAW officials held a conference in Houston March 27 and discussed development plans for the area since the gas-distillate wells have been drilled on large tracts. Rules for development of the oil acreage are expected to be announced. A major portion of the gas-distillate tracts lie in Harris County while the newly completed oil well is in Waller County.

Liberty County: Gulf Oil Corporation has announced location for a 10,000-foot test, Hinz 1, on the flank of the Esperson dome, on a 313-acre tract in GC&SF Abstract 457. Interest in developments in this pool have increased in recent weeks with General Crude Oil Company completing a 1½-mile southwest extension. A hearing is scheduled soon on whether the well should be given a new field allowable or be considered part of the old field.

Outpost: Edwin B. Cox and Jake B. Hamon have staked a 9000-foot northwest outpost in Fig Ridge field, Chambers County, Tyrell 1, F. P. Sterling Survey. It is about one mile northwest of Sun Oil Company's Doornbos 1.

Fort Bend County: Stanolind is making flow tests in Cinco Ranch 1, semi-wildcat three-quarters of a mile north of production at Clodine. Perforations were made at 9497-98 feet and the well has been cleaning into pits. Total depth is 7502 feet with 5½-inch casing set on bottom.

South Louisiana

Two Wildcats Set Pipe For Production Tests

Development activities slumped to a low ebb in the coastal belt last week although two wildcat wells have set casing for production tests. No wildcats were projected in the area while a few field locations were announced.

Beauregard Parish: General Crude Oil Company et al have set 5½-inch casing to around 9400 feet in Baldwin 1, wildcat on Bear prospect in Section 27-6s-9w. Electrical survey was run to total depth of 9513 feet before casing was set to that level. Although details have not

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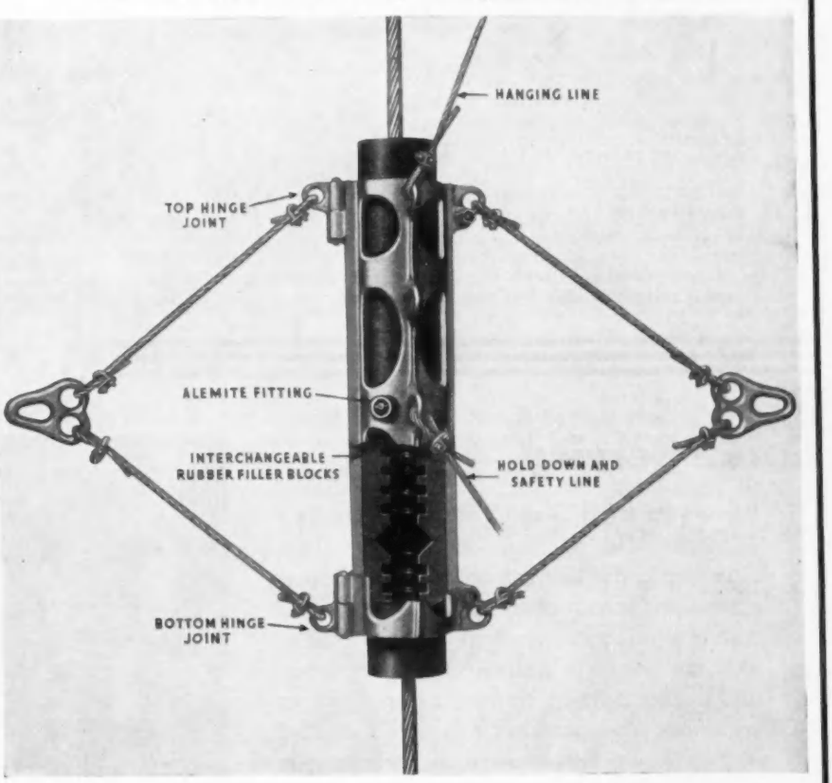

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been released as to what sand or sands have been encountered, but it is reported sufficient saturation was found to make some type of producer.

St. James Parish: Humble Oil & Refining Company is setting casing in Panno & Bossetta 1, wildcat in Section 8-12s-16e, after drilling to 10,689 feet. It is reported the pipe is being set for protection purposes since operators have had some trouble with the hole and since the test is projected to 11,500 feet.

LaFayette Parish: Stanolind Oil & Gas Company has spudded its third well on the north flank of Anse la Butte dome, where the company recently opened deep flank production. The test is Melaneon-Dupuis Unit 1 in Section 43-9s-5e. It will be a deep test.

Deep Sand: Gulf Refining Company has been making some deep tests in Campbell 2, deep well at Neale in Beauregard Parish. The Campbell 2 was perforated at 11,164-174 feet in Wilcox sand. Total depth is 11,216 feet with casing set on bottom. The well is located in Section 25-3s-11w.

Calcasieu Parish: Union Oil Company of California has set 5½-inch casing to 5830 feet, total depth, to test Gray 7-G, another flank test in Section 33-10s-12w at Vinton. Also in Calcasieu Parish, Union Sulphur Company is preparing to spud Burton 1, wildcat in Gul Cove area, Section 23-11s-12w.

R. H. FRIZELL, JR., former employe of Bass & Dillard, producers and drilling contractors, has been added to the West Texas scouting staff of Skelly Oil Company with headquarters at Midland.

North Louisiana

Claiborne Parish Wildcat Negative at Lower Depth

Gulf Refining Company's wildcat, Miller 1, NE NE 14-20n-8w, Claiborne Parish, had no worthwhile commercial show of either gas or oil in testing Cotton Valley formation at 10,596-610 feet. Operators used testing tool and recovered during a 15-minute period 600 feet of rotary mud. A 35-minute test made higher at 10,470-480 feet in Cotton Valley series recovered mostly salt water. Cement retainer was set at 7077 feet and operators tested lower section in Pettit lime formation at 6651-60 feet. This section was squeezed off, however, when mud and salt water was the recovery in testing. Hole was conditioned in preparation for a test in Pettit lime in interval 6608-55 feet.

Concordia Parish: Carter Oil Company and California Company's directional-drilled test at Lake St. John, State Lease 476-2, W½ 13-9n-10e, west edge well, has been temporarily abandoned when a recovery was made of only a slight show of oil from perforations at 2098-2105 feet. Later acid was used in formation but the recovery was salt water. In drill-stem test at this same horizon operators recovered 815,000 feet of gas through ¼-inch choke.

In the east side of the field California Company et al's Community 1, SW4-9n-10e, now drilling below 1800 feet, will explore below deep Eutaw formation which was found in the Lake St. John discovery well at 8100 feet. The discovery, California Company's Pan-American 1, 15-9n-10e, showed gas-distillate at 8940-55 feet but was later plugged back to 4692 feet to produce from Wilcox horizon. Community 1 is 2000 feet west of E. C. Johnston's Brown 1, E½ 4-9n-10e, shallow Sparta discovery which was shut in after testing 26,000,000 feet of gas per day.

Michigan

Deepened Reed City Well Flows From Fourth Zone

Equally as significant as any wildcat strike this year in Michigan, Ohio Oil Company's Heilman 3, C S½ NW SE 19-18n-10w, Osceola County, Reed City field, deepened from 3606 to 3620 feet into the fourth pay horizon of Monroe lime, flowing 120 barrels of oil the first 12 hours and 247 barrels the next 24 hours. It is first commercial producer from this zone in the field, but probably does not rate new horizon discovery logging. The well is on the north side of the field, and originally was completed January 28, 1942, at 3606 feet for 500 barrels per hour for one of the biggest initial producers in the pool. It started to cut increasing amounts of water three months ago and recently had gone dead. Packer was set in new pipe string at 3607-08 feet and hole deepened through some water sand and about 4 feet of dense to caprock lime with pay coming in between 3615-20 feet. It appears doubtful that the fourth productive horizon will carry over field but certain central structural parts should produce from this deeper pay.

Discovery: Robert L. Sander's Walters 1, C NE SW 36-5n-15w, Ottawa County, is flowing 225 to 300 barrels per day through ¾-inch choke to indicate a first-rate shallow field discovery. This wildcat is a mile west of South Zeeland field and already has attracted six locations. Production is from Traverse lime at 1516 feet, chief producing horizon of district.

Deep Test: Pure Oil Company's Thompson 1, N½ NW SE 3-20n-3w, Clare County, still is deepening at 5920 feet with cable tools in hole full of water. It is on the southeast flank of Headquarters field and at present depth has exceeded any previous tests for Clare, Roscommon and Midland counties.

Aetna Field: Gordon Oil Company's Reams 2, S½ SW SW 26-22n-6w, 1320 feet west of Reams 1 producer, flowed 224 barrels of oil in 18 hours, from Monroe dolomite at 3855 feet. This well correlated 34 feet lower on producing horizon than the offset, and 10 feet lower on Monroe than Blue 1, a mile east, heretofore the lowest producing well in area.

Lease Auction: The lands division of the State Conservation Department will auction oil and gas leases on 32,000 acres of state-owned land April 9. The offering will include 12,000 acres in Lake County, 5000 acres in Wexford County and smaller spreads in 10 other counties.

DAVE HENDERSON, West Texas district geologist for the Stanolind Oil & Gas Company, was elected secretary-treasurer of the Midland Geological Society. He succeeds Jerry Roberts, who is being transferred by Seaboard Oil Company to Corpus Christi.

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ARKANSAS

Columbia County—Stephens-Smart: R. H. Crow, Trustee's W. Taylor C-1, nw nw ne 12-15s-20w, flow 145 bbls, Glen Rose 2894-2910 ft, td 4000 ft.

Columbia County—Dorcheat: Phillips' Claudia 1, c s½ nw 13-18s-22w, flow 38 bbls dist, ¼-in, perf 7878-96 ft, cp 900, tp 850, gor 23,700-1, pb, td 8660 ft (workover).

Union County—New London, Northeast Extension: Marine Oil Co.'s Wooley Unit 1, sw sw 7-18s-11w, flow 90 bbls, 11/64-in, td 5849 ft.

Union County—Mt. Holly: Atlantic et al's Davis C-1, ne sw 10-17s-18w, flow 115 bbls, ⅛-in, perf 7189-91 ft, td 7240.

ARKANSAS WILDCATS

Calhoun County: Placid Oil Co.'s Freeman-Smith 3, ne se 14-16s-13w, abnd 6900 ft.

Columbia County—Stephens-Smart: Grady Vaughn's Reynolds-Berg 1, se sw 6-15s-19w, temp abnd, 6110 ft.

CALIFORNIA

Fresno County—Coalinga Old Field: Shell's 166-29, 1632 ft n 1726 ft w sec 29-19-15, pump 230 bbls oil, 12 water, 43 ft perf 2396 ft, oil sand 1880 ft, black shale 2143 ft, td 2398 ft.

Texas Co.'s C-5, 2459 ft n 1072 ft w sec 6-20-15, pump no est, 47 ft perf 2209 ft, td 2387 ft.

Kern County — Belridge South: General's Belridge 23-3, 799 ft n 1200 ft e w¼c 3-29-21, pump 15 bbls 14.3-gr oil, 12 water, perf 624-753, 893-1018 ft, Diatomite 1022 ft oil sand 636 ft, td 1029 ft.

General's Belridge 35-12, 669 ft n, 260 e c 12-29-21, pump 74 bbls 13.2-gr, perf 894-1084 ft, td 1085 ft.

General's 41-12, 669 ft n 790 ft e c 12-2921, pump 82 bbls 13.9-gr, perf 898-981, 1024-1069 ft, td 1070 ft.

Kern County — Buena Vista Hills: Standard's 96-7D, 2320 ft s 2556 ft e nwc 7-32-24, pump 30 bbls, sand 2903 ft, td 3070 ft.

Standard's 39-11D, 440 ft s, 1330 w nwc 11-32-24, pump 58 bbls 27.2-gr, Scalez 2790 ft, td 2916 ft.

Kern County—Kern Front: Westates Petroleum Corp.'s Cauley 37, 750 ft s, 750 e nwc sw nw 16-28-27, pump 148 bbls 15-gr, 7-in 2878 ft, S zone 2820 ft, td 2878 ft.

Kern County—Kern River: (Old well redrilled) Tide Water's Moneta 7, 120 ft s, 1105 e c 30-28-28, pump 12 bbls oil, 18 water, 220 ft perf 1093 ft, td 1093 ft.

Kern County—Lost Hills: Universal Consolidated Oil Co.'s 17, 1530 ft n, 625 w sec 30-26-21, pump 11 bbls 17-gr oil, 4 water, 527 ft perf 1613 ft, td 1613 ft.

Kern County — Midway-Sunset: Chanslor Canfield Midway Oil Co.'s 50-9, 775 ft s 395 ft e w¼c 9-32-23, pump 3 bbls, 15.8-gr, perf 1510-1460, 1290-1280, 1260-1175 ft, td 1600 ft.

Marvic Associates Ltd.'s 4, 240 ft s, 1541 ft w nec 16-31-22, pump 13 bbls 13-gr, perf 1195-1316 ft, td 1316 ft, pd 1200 ft.

North American Oil Consolidated's Lockwood 7A, 195 ft n, 733 e s¼c 16-32-23, pump 30 bbls, 331 ft perf 1190 ft, sand 900 ft, td 1320 ft.

Richfield's Fairfield 6, 4667 ft n, 996 w sec 11-31-22, pump 100 bbls, 111 ft perf 1295 ft, td 1300 ft.

Vedder Petroleum Corp.'s 2, 235 ft n, 1085 w sec 9-3122, pump 25 bbls 12.9-gr oil, 10 water, 197 ft perf 1184 ft, H&T sand 1005 ft, td 184 ft.

Kern County—Poso Creek-Premier: Standard's 5-19, 312 ft s, 1654 w e¼c 5-28-27, pump 87 bbls 14.2-gr oil, 20 water, td 2865 ft.

Kern County — Williams - Antelope Hills: Texas Co.'s Voight 503-6, 660 ft n, 660 e c 6-28-20, flow 276 bbls 17.2-gr oil, 24 water, 1-in, 20/125 lbs, 130 ft perf 2306 ft, 23-6 sand 2125 ft, 45-6 sand 2178 ft, td 2308 ft.

Los Angeles County—Wilmington: (Old well redrilled) General's Isco A-2, 3904 ft s, 2812 w fr c/l Anaheim & Ford, 16-3-9, pump 156 bbls 15-gr oil, 37 water, perf 2701-2992, 3024-3150, 3182-3432, 3466-3515 ft, td 3520 ft; old depth 3620 ft.

Orange County—Yorba Linda: Shell's Olinda Fee 4 57-16, 2499 ft n, 2298 w c/l Cirus & Eureka Aves, 16-3-9, pump 7 bbls 15.8-gr oil, 37 water, 240 ft perf 2537 ft, td 2540 ft.

Sacramento County—Rio Vista: Standard's Perry Anderson 5, 1720 ft n, 550 w sec 35-4-2, 16,480,000 gas, ¾ in, 1626-1529 lbs, 318 ft perf 4479 ft, green sand 4180 ft, white sand 4330 ft td 4480 ft.

Santa Barbara County—Santa Maria Valley: Union's Battles 5, 999 ft s, 330 w nec 25-1034, flow 360 bbls 16.8-gr oil, 240 water, perf 4011-3839, 3642-3383, 3271-2992, 2955-2668 ft, td 4230 ft.

Ventura County — Ventura Avenue: Shell's Taylor 158, 244 ft n, 13,439 w c/l No. 11, flow 2452 bbls 31.7-gr oil, 350 water, 2,000,000 gas, open flow 250/500, perf 9422-8986, 8946-8565, 8485-7980, 7939-7790 ft, td 9425 ft.

CALIFORNIA WILDCATS

Fresno County—Failure: Amerada's Clover F-1-28, 28-16-17, Helm area, McClure 5690 ft, abnd 8500 ft.

Kern County—Failure: General's Kernco 1, 1-29-28, Kern River area, Vedder 3870 ft, abnd 4159 ft.

Trico Oil & Gas Co.'s Howell 1, 32-28-29, Round Mountain area, abnd 2542 ft.

Chanslor Canfield Midway Oil Co.'s 10-7, 7-32-23, Midway-Sunset area, abnd 3870 ft.

ILLINOIS

Clay County: Kingwood's Lewis 1, se nw sw 9-5n-7e, salt wtr disposal well, 2016 ft.

Kingwood's Lewis 3, c se nw sw 9-5n-7e, Weiler 2509-21 ft, 525 bbls, 2521 ft.

Pure's Zander 4, c se ne ne 17-5n-7e, Weiler 2527-33 ft, 119 bbls, 2533 ft.

Clinton County: Goldsmith & Murphy's Goldsmith & Murphy 4, c ne nw 2-2n-2w, Dev 2630-71 ft, 276 bbls, 2671 ft.

Effingham County: Walter Duncan's Kluthe 1, c se se se 33-6n-7e, Weiler 2517-40 ft, 210 bbls, 2540 ft.

Fayette County: Carter's Logsdon 9-D, c se se 10-8n-3e, Dev 3130-31 ft, 75 bbls, 3131 ft.

Carter's Knapp 2, c ne sw ne 20-8n-3e, Weiler 1516-24 ft, 27 bbls, 1524 ft.

Gallatin County: Gulf's Bahl 3, c ne sw sw 15-8s-9e, Tar Spgs 2178-2202 ft, Cyp 2490-95 ft, 83 bbls, 2500 ft.

Ivan Green's Grant 1, c se ne nw 15-8s-9e, Tar Spgs 2174-2214 ft, 17 bbls, 2543 ft.

Hamilton County: Texas Co.'s Minton Comm. 1, ne ne ne 20-4s-7e, McCl 3417-20 ft, 323 bbls, 3425 ft.

Shell's Cox 2, c nw se 12-6s-5e, Aux V 3078-90 ft, 44 bbls, 3104 ft.

Texas Co.'s McGill 5, c se nw sw 27-6s-6e, Aux V 3071-91 ft, 78 bbls, 3101 ft.

Texas Co.'s Bond 4, se sw ne 34-6s-6e, Aux V 3101-30 ft, 80 bbls, 3136 ft.

Texas Co.'s Johns 2, nw nw se 34-6s-6e, Aux V 3141-52 ft, 21 bbls, 3153 ft.

Jefferson County: Nash-Redwine's E. M. Randolph 2, c sw ne nw 34-3s-3e, Aux V 2730-50 ft, 47 bbls, 2775 ft.

Lawrence County: W. R. White's Collison 3, c sw se nw 26-2n-12w, Biehl 1325-1371 ft, 65 bbls, 1372 ft.

Richland County: Pure's Coen 34, c s½ of sec 4-3n-9e, Weiler 2598-2625 ft, 322 bbls.

Wabash County: C. E. Skiles' Smalley 3, c ne se ne 3-1s-13w, L. O'Hara 2600-05 ft, 75 bbls, 2605 ft.

Dean & Morton's Hein 4, s½ nw ne 21-1s-12w, Biehl 1467-80 ft, 40 bbls, 2310 ft.

Washington County: Magnolia's Paszkiewiez 2, sw sw ne 23-3s-3w, Ben 1258-62 ft, 7 bbls, 1274 ft.

Wayne County: Deep Rock's Atkinson 1, c nw se 12-2s-6e, abnd 3344 ft.

White County: Case Pomeroy's Helm 39, nw se ne 22-3s-14w, McCl 2874-2907 ft, 101 bbls, 2923 ft.

Case Pomeroy's Helm 38, n½ nw ne 27-3s-14w, Tar Spgs 2171-88 ft, 45 bbls, 2916 ft.

N. V. Duncan's Calvin 1, c ne se sw 31-3s-14w, abnd 3100 ft.

Sun's Riley 2, c sw sw nw 31-4s-14w, Clore 2025-48 ft, Tar Spgs 2325-29 ft, 126 bbls, 2379 ft.

Skelly's Stone 3, c se sw se 7-4s-10e, Tar Spgs 2444-2515 ft, 60 bbls, 2529 ft.

Pure and Carter's Kisner Consol. 2, c nw se se 7-6s-9e, Pt. Crk, 2809-32 ft, 61 bbls, 2832 ft.

Pure and Carter's Goudy 3, c nw nw ne 18-6s-9e, Ben 2791-2807 ft, 45 bbls, 2810 ft.

B. M. Heath et al's Hemphill-Forter 1, c nw ne se 12-7s-8e, abnd 2615 ft.

ILLINOIS WILDCATS

Clinton County — Failure: Derby's Houkap 1, nw ne ne 15-1n-4w, abnd 3287 ft.

H. A. Harmon's Reed 1, c sw sw 1-2n-2w, abnd 630 ft.

A. B. Schiermann's Loux 1, c nw sw nw 8-3n-2w, abnd 1205 ft.

Kankakee County—Failure: St. Anne Pet. Co.'s Cote 1, nw nw ne 2-29n-12w, abnd 780 ft.

St. Clair County—Failure: D. S. Hager's Klingle 1, c sw se ne 18-1s-6w, abnd 2363 ft.

Wabash County—Failure: Dean & Morton's Dunkel 1, c w½ w½ 5-1s-12w, abnd 2082 ft.

Wayne County—Oil Discovery: Larry Romaine's Kinney 1, c ne se ne 16-1s-8e, Auv V 3124-44 ft, 22 bbls, 3144 ft.

White County—Failure: E. M. Self's Knight 1, c ne ne sw 15-7s-9e, abnd 2648 ft.

INDIANA

Posey County: Cherry & Kidd's Walgrove Corp. 2, sw ne nw 14-4s-14w, Cyp 2610-18 ft, 230 bbls, 2997 ft.

C. A. Lennan's August Wolf 2, ne ne ne 19-6s-12w, Cyp 2338-51 ft, 58 bbls, 2351 ft.

Central States' Hermson 3, ne se nw 30-6s-12w, Penn 967-1025 ft, 28 bbls, 1150 ft.

Vanderburg County: Superior's Nurrenburn 2, ne nw sw 32-6s-11w, Walts 1751-62 ft, 70 bbls, 1762 ft.

INDIANA WILDCATS

Lawrence County—Failure: Central U. S. O&G's Co.'s Bobrink 1, se ne sw 15-6n-1w, abnd 867 ft.

Posey County—Failure: Paul Rossi's Kincheloe-Williams 1, ne ne nw 35-5s-13w, abnd 2967 ft.

Wells Completed in the United States in Week Ended March 27, 1943

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS This Week	Last Week	Cumulative This Year	Cumulative Last Year
Alabama														2
Arkansas	2				2		2		2	4	6	4	40	49
California	20	1			21	1			4	4	26	25	291	222
Colorado													5	3
Georgia														1
Illinois	25		1	3	29		1		7	8	37	37	480	484
Indiana	4				4				2	2	6	7	66	99
Kansas	6			3	9		2		3	5	14	27	343	409
Kentucky	3			1	4				2	2	6	7	69	42
Louisiana	2				2						2	17	129	281
North Louisiana												6	50	
South Louisiana	2				2						2	11	79	
Michigan	2			3	5		1		2	3	8	12	103	170
Mississippi													6	43
Missouri													1	9
Montana													38	36
Nebraska														9
New Mexico	3			1	4				2	2	6	2	59	105
New York	13		5		18						18	22	279	323
Ohio	4	7		2	13						13	10	214	326
Oklahoma	6		1	5	12	1		1	2	3	16	32	324	446
Pennsylvania	37	4			41						41	34	575	923
Tennessee														3
Texas											66	55	893	1,917
East Texas	1				1		1		1	2	3	5	53	
North Texas	11			5	16	3	1		1	2	21	14	209	
West Central				2	2				1	1	3	6	70	
West Texas	10			4	14		1		1	2	16	9	202	
Panhandle	2	1		1	4						4	3	66	
Upper Coast	4				4		1		1	2	6	5	58	
Lower Coast	2			1	3		2		2	4	7	8	127	
Southwest	1			1	2		1		2	3	5	4	89	
South Central									1	1	1	1	19	
West Virginia		6		3	9	2					11	8	143	190
Wyoming													30	21
Total U. S.	158	19	7	35	219	7	13	1	36	50	276	299	4,088	6,113

*Includes "distillate" wells. † Includes salt water disposal wells.

KANSAS

Barton County — Semi-Wildcat — Ainsworth Area: Stanolind's Reif 1, c se nw 36-16s-13w, Arb 3406 ft, abnd 3428 ft.

Graham County—Morel: Continental et al's Morel 3, nw sw nw 14-9s-21w, Arb 3875 ft, abnd 3889 ft.

Greenwood County — Seeley - Wick: Cities Service's Gragan 5, nw sw ne 32-22s-11e, sand 1933 ft, shot 160 qts, pump 31 bbls oil, 144 wtr, 2007 ft.

McPherson County — Lindsborg: Carter's Fornberg 3, c w½ nw sw 18-17s-3w, Viola 3379 ft, 2000 gal acid, pump 158 bbls, 3385 ft.

McPherson County — SW Lindsborg: Auto Ordnance's Bengstrom 4, c w½ se ne 25-17s-4w, Viola 3380 ft, 1000 gal acid, 4000 gal acid, pump 624 bbls, 3387 ft.

Phillips County—Ray: Cities Service's Griffith 1, sw sw nw 27-5s-20w, Arb 3562 ft, potential 1109 bbls, 3687 ft.

Reno County—Zenith: Porter, Carpenter & Lay's Voelker 2, c ne sw 6-24s-10w, Viola 3717 ft, 5000 gal acid, potential 2803 bbls, 3728 ft.

Rice County—Silica: J. D. Eckert's Linville 1, ne nw se 4-20s-10w, Arb 3356 ft, abnd 3359 ft.

Stafford County—Zenith: A. S. Ritchie's Richardson 1, c e½ ne nw 22-24s-11w, Viola 3852 ft, 500 gal acid, 1093 bbls oil, 4 percent wtr, 3888 ft.

KANSAS WILDCATS

Decatur County: Helmerich & Payne's Harger 1, se se ne 29-1s-27w, dr 1200 ft.

Edwards County: Broderick and Gordon's Cross 1, c nw ne 6-24s-17w, dr 280 ft.

Cities Service et al's Wilson 1-B, se nw sw 4-25s-16w, dk.

Leavenworth County: Chas. Miller's Moses 1, c se se 25-9s-20e, dr 62 ft.

McPherson County: Black-Marshall's Neel 1, ne ne nw 25-19s-5w, mim.

Morton County: V. R. Wyatt's Craver 1, se se sw 32-34s-42w, lcn.

Pratt County: Cities Service's Whitman 1, nwc 11-27s-12w, mim.

Stanolind's Frisbie 1, c se sw 5-26s-13w, lcn.

Reno County: Adair & Morton's Long 1, ne ne nw 24-25s-8w, mirt.

Rice County: Mercury Drlg.'s Ploog 1, nw nw sw 5-18s-9w, plts.

Rooks County: Sinclair's Mathews 1, sw ne se 28-6s-20w, mirt.

Russell County: Jones & Shelbourne's Speere 1, se se ne 23-13s-14w, c&p.

Hartman & Blair's Boxberger 1, sw ¼w se 10-14s-14w, cellar.

Harry Gore's Parker 1, se se sw 7-15s-12w, lcn.

Saline County: Falcon-Seaboard and Phillips' Morris 1, c w½ se se 33-16s-3w, matl.

Sedgwick County: Dickey Oil Co.'s Friess 1, nec 7-27s-2w, lcn.

Stafford County: W. P. Faulkner's Walter 1, c n½ ne ne 18-21s-13w, c&p.

KENTUCKY

Butler County: Cumberland Pet. Co.'s Brown 9, 9-H-32, 25 bbls, 402 ft.

Henderson County: Sinclair Prairie's Burbank 9, 4-P-21, Cyp 2304-14 ft, 168 bbls, 2314 ft.

Trans-Tex Prod.'s Burbank 5, 24-Q-21, Cyp 2301-06 ft, 60 bbls, 2309 ft.

Union County: Sun's Highland B-1, 16-P-20, abnd 1927 ft.

KENTUCKY WILDCATS

Henderson County—Failure: Cherry & Kidd's Dorsey 1, 18-Q-21, abnd 2789 ft.

Logan County—Failure: Babler Oil Co.'s Johnson 1, 16-D-31, abnd 1530 ft.

SOUTH LOUISIANA

St. Charles Parish—Paradis: Texas Co.'s Dannel 1, 11,161 ft s, 1508 ft w of ne cor frac sec 8 in 39-14s-20e, 7-in 10,490 ft, perf 10,178-28 ft, flow 288 bbls, 9/64-in, td 10,490 ft.

St. Martin Parish—Lake Chicot: Amerada and Phillips' State-Lake Chicot 5-A, 2975 ft s, 794 ft w nw c 31-11s-10e, in 25-11s-9e, 5½-in 9091 ft, perf 8146-70 ft, flow 227 bbls, ⅛-in, td 9450 ft.

MICHIGAN

Bay County—Kawkawlin: Gulf's Siegrist 1, n½ nw ne 33-15n-4e, Dundee lime, flow 50 bbls 8 hrs, 2943 ft.

Lake County—Sauble: Louis Rose's Lobdell 1, ne ne ne 16-19n-14w, Traverse lime dry 2166 ft.

Missaukee County—Aetna-Prosper: Gordon, Leonard & Rowmor's Reams 2, s½ sw nw 26-22n-6w, Dundee dolomite, flow 224 bbls 18 hrs, td 3855 ft.

Montcalm County—Richland: E. C. Dailey's Foote 1, se se sw 18-12n-5w, dry 1234 ft.

Ottawa—South Zeeland: Perry, Gould & Cross' Veurrink 1, se nw se 31-5n-14w, Traverse lime dry 1517 ft.

MICHIGAN WILDCATS

Allegan County—Failure: J. S. Brailey's Shields 1, ne ne se 26-4n-13w, Traverse 1718 ft, dry, 1790 ft.

Ottawa County—Oil Discovery: Robert L. Sander's Walters 1, c ne sw 36-5n-15w, Traverse 1514 ft, flow 270 bbls, 1516 ft.

Van Buren County — Failure: Clapsaddle Drilling Co.'s Putnam 1, sw sw ne 14-1s-16w, dry, 1113 ft.

NEW MEXICO

Eddy County: Geo. Turner et al's Wills 3-A, c nw se 13-20s-28e, pump 25 bbls, shot 30 qts 841-59 ft, td 869 ft.

Western Prod. Co.'s Keeley 5-C, c sw se 24-17s-29e, flow 787 bbls, c-in, natural, lime 2964-75 ft.

Lea County—East Lusk: Carper Dr. Co.-P. B. English-Hinkle's Miller 1, c nw nw 19-19s-32e, elev 3569 ft, base salt 2273 ft, abnd 6710 ft.

Lea County—Eunice: T.P. Coal & Oil Co.'s State 26-A, c nw ne 8-22s-36e, flow 168 bbls, 2-in, acid 5000 gals, 3795-3890 ft.

NEW MEXICO WILDCATS

Eddy County—Failures: Broderick et al's Leonard-State 1, c ne se 8-17s-29e, elev 3608 ft, salt 245-697 ft, top red sand 1675 ft, abnd 2500 ft.

Heacock & Owens' Yates 1, sw ne ne 6-20s-27e, abnd 987 ft.

OKLAHOMA

Creek County—Glenn: Gulf's Clayton 32, sw ne se 8-17n-12e, Glenn 1527 ft, input well, 1694 ft.

Garfield County — N. Garber: Champlin's Pengarris 1, c sw ne 30-23n-3w, Arb 5685 ft, 4000 gals acid, pump 50 bbls oil, 80 wtr, 5706 ft.

Garvin County—Pauls Valley: Ohio's Huckaby Unit B-1, se sw ne 25-4n-1w, Bromide zone 3960 ft, Bromide sand 4067 ft, pump 186 bbls oil, 456 wtr, 4075 ft.

Okfuskee County — N. Okemah: British-American's Bloss B-2, se ne sw 36-12n-9e, Booch 2860 ft, abnd 3225 ft.

Oklahoma County—Edmond: Harper & Turner's Harper 9, c sw se 17-14n-2w, 2nd Wx 6340 ft, abnd 6386 ft.

Oklahoma County—E. Edmond: Harper & Turner's Kunc 2, c ne sw 33-14n-2w, Hunton 5945 ft, abnd 6030 ft.

Osage County—E. Watchorn: Continental's Tribe 1, sw sw nw 24-23n-3e, Wx 3811 ft, flow 539 bbls oil, 3 mcfg 3833 ft.

Osage County—Wynona: Barnsdall's (Osage) 9, ne nw sw 30-24n-10e, Bartles 1992 ft, shot 180 qts 2025-72 ft, pump 20 bbls, 2082 ft.

Pontotoc County — Bebee: G. Witherspoon et al's Starrett 1, nw se ne 29-5n-5e, Trenton 2590 ft, abnd 2605 ft.

Pottawatomie County — Avoca: Mid-Continent's Rich 1, se ne ne 1-6n-3e, Viola 4243 ft, Trenton 4288 ft, 8500 gal acid, pump 186 bbls, 4303 ft.

Seminole County — NE Wewoka: Jordan's Ligon 1, nw nw se 16-8n-8e, Hunton 3923 ft, 2500 gal acid, flow 248 bbls, 4265 ft.

Stephens County—West Loco: Singer's Watson 1, ne nw sw 6-3s-5w, Lime 1160-96 ft, pb to 1170 ft, abnd 1215 ft.

OKLAHOMA WELLS DEEPENED

Osage County—Happy Hollow: P. M. Pinney's (Osage) 8, sw nw sw 15-24n-8e, otd 1945 ft, pb to 2068 ft, abnd 2578 ft.

OKLAHOMA WILDCATS

Cleveland County: Deep Rock et al's Harris 1, c ne nw ne 11-10n-1w, bldg dk.

Lincoln County: R. H. Lynn's Yonts 1, sw sw sw 18-15n-4e, mim.

Payne County: Wood Oil Co.'s Ramsey 1, c ne se 19-18n-5e, Ccb 2645 ft, Big lime 3070 ft, Osw 3115 ft, Prue 3237-81 ft, Verd 3281 ft, Skinner 3375-80 ft, Miss lime 3695 ft, dr 3765 ft.

EAST TEXAS

Cass County—Kildare: Phillips' Stotts 1, sw cor John M. Watson survey, flow 156 bbls, 3/16-in, perf 5996-6005 ft, td 6080 ft.

C. H. Lyons' Smith 2, Hopson survey, flow 125 bbls, 10/64-in, td 6066 ft.

EAST TEXAS WILDCATS

Navarro County — Failure: F. B. Vonder Hoya et al's Bryant 1, 2200 ft from ne and 660 ft from se lines J. M. Morrell sur, abnd 1318 ft.

NORTH TEXAS

Archer County: Robertson Dr. Co.'s Clark 1, 660 ft out nwc blk 13, S.A.R. subdiv of G. P. Diggs sur, pump 10 bbls, sand 1359-67 ft.

Archer County—Cooper: Geo. W. Cooper et al's Perkins-Cullum 1, 660 ft out nec blk 69, KWVFL sur, KMA lime 4105 ft, Bend 4540 ft, flow 539 bbls, ¼-in, acid 3000 gals, conglomerate, 4883-4901 ft.

Clay County — Ross: Continental-Superior-Dillard's Ross 11, 1501 ft wel and 1336 ft nsl sec 31, Wm. Walker sur, pump 77 bbls, acid 12,000 gals, Bend 5408-5525 ft, td 5527 ft.

Clay County: Fortex Oil Corp.-Marger Oil Co.'s Dallas Stock Bank-Texaco 1-A, 20 ft ne No. 5 and in sec se-160 of nw-440-ac sec 35, J. Duncan sur, abnd 266 ft.

Cooke County—Bindel: Texas Co.'s Fleitman 2, 660 ft out nec 110-ac lse, Wm. Simpson sur, flow 1027 bbls, ¾-in, natural, Ellenburger, 3193-5216 ft.

Jack County—Hoefle: Standard of Texas and Hanlon-Buchanan's Jackson 1, 3135 ft snl and 495 ft wel SP 1, Bend 4816 ft, flow 525 bbls, 20/64-in, acid 3000 gals, 4820-30 ft.

Montague County—Bowers: Pace Pet. Co.'s Stayton 1, 330 ft nsl and 1113 ft ewl of s-170-ac tr, Jas. Ferguson sur, abnd granite 4192 ft.

Throckmorton County: Walter Neustadt et al's McKeichan 4-A, 1060 ft snl and 500 ft wel J. S. Wright A-1283, pump 6 bbls, sand 726-31 ft.

W. Neustadt et al's McKeichan 5-A, 430 ft snl and 490 ft wel J. S. Wright sur, pump 5 bbls, 718-25 ft, td 729 ft.

Wichita County—K-M-A Ellenburger: E. C. Oil Co.'s LeBus 8-E, 482 ft ewl and 330 ft snl of s-100-ac of W. H. Spillers sur, Ellenburger 4249 ft, flow 964 bbls, 2-in, acid 3000 gals 4255-80 ft.

Wichita County: Paradise Oil Co.'s Waggoner Est. 1-E, 480 ft snl and 660 ft ewl GC&SF 1, A-767, Ellenburger 3250 ft, pump 35 bbls, perf Dyson sand 1942-67 ft, td 3277 ft, pb to 2006 ft.

Wilbarger County: Frank Wood et al's Waggoner Est. 1, H&TC 30, blk 5, abnd 2015 ft.

Young County: Belfort Oil Co.'s Robertson 1, nec S. McKissick sur A-184, flow 21 bbls, sand 3824-45 ft.

A. G. Talbot and Schmitz's Ferguson 2, 330 ft snl and 495 ft wel of L. W. Smith sur A-1822, pump 60 bbls oil, 2 water, sand 3522-26 ft.

R. J. Watson's Taack 2-A, 1500 ft snl & 330 ft ewl TE&L 248, abnd 750 ft.

Young County — Burns - Ragland: Hanlon-Buchanan's Hunter 2, 1667 ft snl and 1867 ft ewl TE&L 290, Bend 4030 ft, Miss 4945 ft, abnd 4969 ft.

NORTH TEXAS WELLS DEEPENED

Clay County—Worsham: Gulf's Scaling 1, ne nw nw T&NO 3, otd 5814 ft, pump 25 bbls oil, 99 water, perf 3360-3400 ft, td 5839 ft.

Cooke County: Kewanee Oil Co.'s Hyman-Lanier 23-A, 1004 ft snl and 150 ft ewl of e-80 of 184-ac tr, ET 2, otd 1553 ft, shot 1547-62 ft, water disposal well, td 1571 ft.

Young County: E. W. Robitaille et al's Vaughn 6-A, c sw BBB&C 1, otd 4068 ft, pump 3 bbls, shot 70 qts 4225-50 ft, td 4300 ft, pb to 4250 ft.

NORTH TEXAS WILDCATS

Cooke County—Failure: Kingery Bros. Dr. Co.'s Fisher 1, 330 ft out swc blk 18, John Barnett sur A-42, abnd 1653 ft.

Jack County—Oil Discovery: Chas. H. Kadane et al's Carter-Shell 2, 660 ft out nwc TE&L 3311, pump 5 bbls oil, and 5 water, sand 265-74 ft, td 345 ft.

TEXAS PANHANDLE

Carson County: L. R. Hagy-Harrington-Marsh's Witter 1-A, c e½ I&GN 1, blk 7, elev 3298 ft, 46,000,000 gas, acid 7000 gals 2468-2670 ft, td 2681 ft.

Gray County: Magnolia's Fee (tract 227) 60, I&GN 15, blk 3, pump 49 bbls, shot 180 qts 3020-90 ft.

Hutchinson County: Shamrock O&G Corp.'s Stewart 5, c n wse AB&M 19, blk M-16, pump 283 bbls, 3153-3200 ft.

Shamrock's Stewart 6, 660 ft nsl and 1920 ft ewl AB&M 19, blk M-16, jkd 3110 ft.

WEST TEXAS

Andrews County—Fullerton: Fullerton Oil Co.'s Wilson 4-A, c ne se PSL 16, blk A-32, elev 3363 ft, flow 1879 bbls 1-in, acid 24,000 gals Clear Fork 6745-7255 ft.

Andrews County—Embar-Ellenburger: Phillips' University-Andrews 28, c sw se 19, blk 10, elev 3258 ft, flow 514 bbls ¼-in, acid 500 gals, Ellenburger perf 7995-8006 ft, td 8010 ft.

Coke County—Blackwell: W. F. Morgan et al's Lackey 1, c sw sw H&TC 272, blk 1-A, elev 2130 ft, abnd 3748 ft.

Ector County—Goldsmith: Carl B. King-Bay Pet. Corp.'s Cummins-Tidal 2-A, 440 ft snl and 2200 ft ewl T&P 32, blk 45, T-1-N, flow 66 bbls, 1-in, acid 6000 gals 4230-93 ft.

Hockley County: L. M. Glasco et al's Mallet 7-C, 580 ft out nwc lab 17, leag 48, Edwards CSL, flow 487 bbls cas, acid 12,000 gals, 4910-57 ft.

Jerry Hawkins et al's Mallet 8-A, 580 ft out nec lab 24, leag 47, Edwards CSL, flow 679 bbls cas, acid 11,500 gals, 4920-65 ft.

T. F. Morrow et al's Mallet 17, 580 ft out sec lab 19, leag 48, Edwards CSL, flow 535 bbls, 2-in, acid 12,000 gals 4930-62 ft.

Pecos County—Toborg: Cardinal Oil Co.'s Toborg 12, 1050 ft nsl and 1325 ft ewl A&B 539, pump 37 bbls, sand 337-78 ft.

Reagan County—Barnhart: Amerada's University 1-R-L, c nw se sec 3, blk 48, elev 2754 ft, base shale 8922 ft, flow 1351 bbls, ½-in, acid 6000 gals, Ellenburger perf 8980-9090 ft, td 9128 ft.

Ward County—Magnolia-Sealy South: Belfort Oil Co.'s University-Texaco 1-W, 660 ft snl and 1992 ft wel sec 14, blk 16, abnd in sul w 3090-3110 ft.

Winkler County—Weiner: Skelly's Halley 55, sw nw nw PSL 8, blk B-11, elev 2803 ft, brown lime 2335 ft, abnd 3231 ft.

Skelly's Halley 56, sw sw nw PSL 8, blk B-11, elev 2811 ft, San Andres 3693 ft, jkd 3896 ft.

Yoakum County—Wasson: DeKalb Agricultural Assn's Armstrong-Humble 1, 555 ft nsl and 1875 ft ewl sec 889, flow 1049 bbls, 2-in, acid 10,500 gals, 4948-5067 ft.

Devonian Oil Co.'s Bennett 3, c nw ne sec 631, flow 403 bbls, cas, acid 11,000 gals, 5197-5285 ft.

WEST TEXAS EXTENSION

Ector County—Foster: Union's Kone 1, c nw sw T&P 41, blk 42, T-2-S, pump 102 bbls oil, 33 water, shot 550 qts, 4460-4656 ft (¾-mi extension).

WEST TEXAS WILDCATS

Yoakum County—Failure: Barnsdall's Heath 1, c ne ne sec 315, blk D, elev 3649 ft, anhydrite 2400 ft, Yates grains 3130 ft, brown lime 4130 ft, San Andres lime 4570 ft, top Clear Fork between 5095-6025 ft, abnd 7595 ft.

TEXAS GULF COAST

Hardin County—Sour Lake: Earl C. Hankamer's Yount 1, 12.6-ac tr, Stephen Jackson sur, 7-in 2204 ft, flow 132 bbls, 10/64-in, td 2248 ft.

Matagorda County—North Bay City: Sun's McDonald 2, 1733 ft se of nwl & 660 ft sw of nel of 500-ac lse, Jacob Betts Lse, 6-in 8803 ft, perf 7768-79½ ft, flow 26 bbls, 3/32-in, td 8803 ft.

Montgomery County—Lake Creek: Superior's McWhorter 5-A, C Damuth 176-ac tr, T. J. Nichols sur, 7⅝-in 10,244 ft, perf 9754-93 ft, flow 333 bbls, ¼-in, perf 9230-45 ft, flow 262 bbls 56.8 gr, 1,951,000 gas, ¼-in, dual completion; may triple complete, td 10,255 ft.

San Jacinto County—Mercy: Shell's Central Coal & Coke 9, 3328 ft se alg nel of James Robinson sur fr n cor & 662 ft sw'ly at ra in center of 40-ac unit, sand 8252 ft, 5½-in 8252 ft, flow 147 bbls, ⅛-in, td 8280 ft.

TEXAS GULF COAST WILDCAT

Chambers County—Failure: Glenn H. McCarthy's Broussard 1, Stowell area, 930 ft fr e & 1011 ft fr nl of 240-ac tr in L. Lopez sur, abnd 9015 ft.

TEXAS GULF COAST EXTENSION

Liberty County—Esperson: General Crude's Welch Fee 3-B, 660 ft fr s, 6225 ft fr el of M. Duncan sur, 5½-in 8699 ft, perf 8400-30 ft, flow 768 bbls, ⅛-in, td 9518 ft. Extends production 1½ mi sw.

WEST CENTRAL TEXAS

Jones County: Fain-McGaha et al's Cannon 1-B, 330 ft out sec lot 72, leag 126, DeWitt CSL, elev 1792 ft, abnd 2713 ft.

Humble's Williamson 1, c nw sw T&P 31, blk 18, elev 1896 ft, abnd 3135 ft.

WEST CENTRAL TEXAS WILDCAT

Jones County—Failure: Fain-McGaha's Nevill 1, 2190 ft nsl and 330 ft ewl T. W. Hunt 260, elev 1732 ft, abnd 2408 ft.

LOWER TEXAS COAST

Jackson County—Texana: Sinclair Prairie's Volkmer 2, 2000 ft s of nl of Francis F. Wells sur, 5½-in 5113 ft, perf 5073-74 ft, abnd 5113 ft.

Kleberg County—Seeligson: Humble's King Ranch-Cadeza 14, 1980 ft fr wl & 1158 ft fr sl GH&H 49, 5½-in 5951 ft, perf 5240-50 ft, flow 116 bbls, ¼-in, td 5997 ft.

Nueces County—Stratton: Edwin B. Cox and Jake L. Hamon's Davis 1, 467 ft fr se & n'ly swl of 60-ac lse, sec 199, 5½-in 6545 ft, perf 6530-40 ft, flow 82 bbls, 6/64-in, td 6686 ft.

LOWER TEXAS COAST WILDCATS

Bee County — Distillate Discovery: Dirks Bros.' Page 2, 660 ft fr ne & sel's nw 500-ac of 757-ac tr, Thomas K. Pilkington sur, 5½-in 7892 ft, perf 7464-78 ft, flow 130 bbls dist, ¼-in, 3,000,000 gas, td 8100 ft, opens Carizzo sand field named Mineral.

Jackson County — Failure: W. Stewart Boyle's Budd 1, 1 mi w Cordele, 224-ac lse, IGN 7, abnd 2508 ft.

Jackson County—Failure: Humble's Isaacson 1, 565 ft fr nw&sel's of 106-ac lse in Carlos Lasso sur, 5½-in 6450 ft, perf 6415-25 ft, abnd 6760 ft.

Karnes County—Oil Discovery: Seaboard's Rzeppa 1, 500 ft fr s&wl's 101-ac lse, tr 22, Don Erasmo Seguin Gr, 3½ mi sw Hobson, 5½-in 4048 ft, perf 4000-10 ft, flow 93 bbls, 31.5-gr ⅛-in, td 4803 ft, opens Hobson field.

SOUTHWEST TEXAS

Duval County—Casa Blanca: Transwestern Oil Co.'s Duval County Ranch 31, 1980 ft fr n'ly nl & w'ly el of GC&SF 293, abnd 1931 ft.

LaSalle County—Washburn: Quintana's South Texas Syndicate 19, 510 ft fr el, 340 ft fr sl of T. W. House 87, 5-in 5522 ft, flow 454 bbls, ¼-in, td 5540 ft.

SOUTHWEST TEXAS WILDCATS

Live Oak County—Failure: Sal Vieja Oil Co.'s Riser 3, Mountain View area, 660 ft fr el & 1980 ft fr nl of A. Moore 383, abnd 2845 ft.

Starr County—Failure: Continental's Davenport 2, 331 ft fr wl, 990 ft fr s lof CCSD & RGNG 532, abnd 6000 ft.

SOUTHWEST TEXAS EXTENSION

Webb Cunty—Dulup: Dulup Oil Co.'s Puig 3, 330 ft fr s&wl's blk 41, Edgington Mineral subdvn, Albercas de Arriba gr, sand 1816 ft, 5½-in 1884 ft, perf 1816-28 ft, pump 100 bbls, td 1884 ft, extends field 1 mi n.

SOUTH CENTRAL TEXAS WILDCAT

Travis County—Failure: Marts & Beven's Red 1, 1½ mi w Elroy, William Lewis sur, abnd 710 ft.

United States Wildcat Starts

ARKANSAS

Calhoun County: Placid Oil Co.'s Smith 4, ne nw 2-15s-14w, dr.

Placid Oil Co.'s Smith 5, nw se 14-16s-13w, dr.

Franklin County: Arkansas Western Gas Co.'s Woolsey 1, sw sw 13-10n-27w, lcn.

Little River County: William S. King's Stubblefield 1, nw ne ne 10-12s-30w, sd.

Miller County: Magnolia et al's Olivet A-9, ne ne 4-16s-26w, dr.

Northern's Adcock A-1, nw nw 1-19s-28w, dr.

Union County: Cresslenn's Trimble & Mahoney 1, sw se 15-16s-15w, woc.

John C. Schmidt, Trustee's Kelly 1, ne se 9-17s-14w, rig.

B. S. J. Corp.'s Jerry A-1, s½ se sw 21-17s-14w, dr.

Johnson County: Arkansas-Louisiana Gas Co.'s Hendrix 1, se 21-10n-21w, dr.

CALIFORNIA

Fresno County: Amerada's Wheatville Ranch F-21-8, ne 8-7-18, near town of Wheatville.

Superior's Kreyenhagen 81-22, on large block between Cantu Creek and Riverdale, w mi se Wheatville, lcn.

Kern County: Petromont Oil Co.'s No. 1, sw 25-28-20 (Belridge South extension) lcn.

Pacific Western and Getty's McNeil 1, 22-30-24 (Elk Hills area) lcn.

Los Angeles County: Continental's Baldwin 1, 3-2-11 (Rose Hill area) lcn.

Orange County: A. A. Carey's Meyer 1, 16-6-10 (Costa Mesa area) lcn.

ILLINOIS

Clay County: Northern Ordnance, Inc.'s Sapp 1-D, sw se 5-2n-5e, lcn.

Clinton County: William Murphy's Becker 1, sw ne se 18-1n-3w, dr.

Franklin County: Oil Management, Inc.'s U. S. Coal & Coke Co. 1, nw nw nw 25-5s-2e, lcn.

Lario O&G Co.'s Franklin Co. Mining Co. 1, sw sw nw 36-6s-4e, lcn.

Hamilton County: Texas Co.'s Mann 1, se nw ne 21-6s-6e, dr.

Marion County: Seaboard's Kniseley 1, ne se se 18-3n-4e, lcn.

Richland County: J. Hassler et al's Bunn-Community 1, e½ se nw 33-3n-14w, lcn.

Wayne County: Gulf's Garrison 1, se se nw 7-1s-5e, lcn.

White County: B. M. Heath's Miller 1, se ne sw 26-4s-9e, lcn.

N. V. Duncan's L. Stokes 1, se ne se 27-4s-10e, lcn.

INDIANA

Pike County: Chester Oil Co.'s Shaultz 1, sw sw sw 16-1s-9w, lcn.

KANSAS

Barton County—New Field: Helmerich & Payne's Roesler 1, se se nw 14-18s-11w, Lans 3010 ft, Arb 3291 ft, pb 3306 ft, 151 bbls, 3313 ft.

McPherson County—Failure: Adair & Morton and Phil-Han's Johnson 1, sw nw se 6-17s-1w, Miss 2727 ft, abnd 3747 ft.

Osborne County—Failure: Carter's Neuschwanger 1, c ne sw 15-8s-14w, Greenhorn 370 ft, Dakota 485 ft, Cimarron 810 ft, Anhy 1097 ft, salt 1450 ft, Ft. Riley 1840 ft, Florence 1930 ft, Neva 2186 ft, Topeka 2798 ft, Lans 3060 ft, Viola 3566 ft, Simp shale 3673 ft, Arb 3728 ft, abnd 3794 ft.

Sedgwick County—Failure: Aylward and Atlantic's Draper 1, c n½ ne ne 34-29s-2w, Lans 2927 ft, Miss 3548 ft, Mise 3983 ft.

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Did you know that more men engaged in the drilling-producing business subscribe to The Oil Weekly than to any other paper? If you want to buy, sell or exchange good used equipment, a low-cost ad in these columns will get action for you in a hurry. See rates quoted below.

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■ **Immediately available all types of printed forms generally used by oil companies. Lease forms, daily production and gauge reports, priority, purchase and emergency order forms, labor time sheets, daily truck drivers reports, material and pipe tally forms, etc. Complete catalog on request. Address Oil Form Dept., Gulf Publishing Company, Houston, Texas.**

ADVERTISING RATES

TRADING POST SECTION

Regular classified advertisements for this special section, set in type this size without border, take flat rate of 7 cents per word for the first insertion and 5 cents per word for each subsequent insertion of same copy. Display advertisements for this section, set in suitably larger type with ruled border, are $5.00 per inch for first insertion and $4.00 per inch for subsequent insertions. Remittance must accompany copy which should be sent to:

Trading Post Section, THE OIL WEEKLY
P. O. Box 2608 Houston, Texas

Simp 4003 ft, B. Miss 3930 ft, Arb 4092 ft, abnd 4102 ft.

Stafford County—New Field: W. P. Faulkner and Atlantic's Rothgarn 1, c e½ sw se 10-21s-13w, Lans 3286 ft, Congl 3533 ft, Simp 3572 ft, Arb 3573 ft, 6500 gal acid, 180 bbls, grav 35.6, 3609 ft.

SOUTH LOUISIANA

Evangeline Parish: Danciger's Haas 1, Reddell area, start sw cor sec 22, go n 36 deg w 5152 ft, thence n 58 deg 40 mins e 1612 ft to lcn in sec 22-4s-1w, lcn Wilcox test.

NORTH LOUISIANA

Bienville Parish: Electric Gas & Oil Co.'s State 1, c w½ 8-16n-10w, wo.

Placid's Southern Advance-Hodge Hunt 1, sw ne 16-15n-6w, dk.

Bossier Parish: C. W. Beene's Fenet 1, sw ne nw 25-21n-14w, dr.

White & Hinton's Louisiana Real Estate 1, sw ne 16-21n-14w, lcn.

Caddo Parish: Harris & Owens' Fuller 1, se ne 16-21n-14w, dr.

Catahoula Parish: Gilger et al's Peck 1, sw nw 51-10n-8w, dr.

Fisher's Rhone 1, sw sw 6-6n-7e, dk.

Claiborne Parish: Skelly-Sunray's Griffis 1, se ne 36-30n-7w, dr.

Concordia Parish: Northern's General American 1, se ne 9-7n-7e, dr.

DeSoto Parish: Oakes-Easton et al's Ramsey 1, nw sw 27-13n-16w, sd.

Tensas Parish: Carter's Rhodes 2, nw 28-9n-10e, dr.

Webster Parish: Temple's Woodard & Walker 1, ne sw 9-17n-8w, dr.

MICHIGAN

Allegan County: Dapar Oil Co.'s Stebbins 1, nw ne ne 3-4n-12w, dr.

Antrim County: Ohio's Joran 1, w½ nw se 3-30n-6w, dr.

Clare County: Turner Petroleum Corp.'s Harvey 1, s½ sw se 11-17n-3w, lcn.

Crawford County: Freeman Oil Co.'s Corning 1, c ne se 22-25n-4w, lcn.

Gladwin County: Sun's State A-1, e½ ne se 19-17n-2w, dr.

Jackson County: J. W. Kuhn's Richardson 1, c nw se 1-3s-3w, lcn.

NEW MEXICO

Lea County: Culbertson & Irwin et al's Bowman 1-N, c se se 26-19s-32e, lcn 3000-ft test.

Mascho Oil Co. et al's State-Philco 1, c se se 3-16s-33e, lcn for 5100-ft test.

OKLAHOMA

Comanche County—New Field: Texas Co.'s Cline 1, c nw ne 8-3n-10w, sand 475-510 ft, 4,582,000 cfg, shut in press, 400 lbs, 1122 ft.

Stephens County—Failure: F. G. Clappet et al's McCasland 1, sw sw ne 9-1n-4w, sand 1305-09 ft, abnd 2501 ft.

T. C. Vaughn's Hervey 1, se ne se 31-2s-5w, broken lime and shale 1180-87 ft, lime 1260-87 ft, shale and sand 1635-47 ft, lime 1663-1700 ft, abnd 1754 ft.

EAST TEXAS

Kaufman County: Sun's Rutledge 1, 2376 ft from se and 660 ft from ne lines 220-ac tr, E. Parsons sur, 3½ mi n of Elmo, mim 10,000-ft Smackover test.

Leon County: Albert Plummer et al's Henry 1, 3500 ft from nw and 2100 ft from ne lines of Robt. Rogers sur, 2½ mi ne Normangee, rur 8000-ft test.

Morris County: Humble's Wright 1, 660 ft out nwc 84-ac lse, Samuel Storey sur, 2½ mi sw Omaha, lcn Lower Trinity test.

Upshur County: H. H. Groneman et al's Johnson 1, 330 ft out swc 72-ac lse, Wm. Williams sur, 3 mi e Big Sandy, lcn Woodbine test.

TEXAS GULF COAST

Fort Bend County: Phillips' Robinson 1, lot 15, west flank Blue Ridge, lcn 7000-ft test.

NORTH TEXAS

Archer County: Consolidated Oil Co.'s Humphrey 1-C, 417 ft ewl and 467 ft nsl E. S. Heath sur, lcn 1650-ft test.

Phillips' Wilson-Luke 1, nw nw ne ATNCL 117, lcn 5200-ft test.

Young County: Cosden's Huber 1, 467 ft out nec w½ B. Huber sur A-1323, lcn 4500-ft test.

WEST TEXAS

Gaines County: Gulf's Kottwitz 1, c nw nw WT 92, blk G, 7½ mi ne Seminole field, lcn 5500-ft test.

WEST CENTRAL TEXAS

Shackelford County: R. H. Roark et al's Chism 1, se sw nw sec 11, Blind Asylum Lands, lcn 1000-ft test.

LOWER TEXAS COAST

Hidalgo County: Sun's Davenport 1, 1980 ft fr s'ly sl & 1980 ft fr e'ly wl in e portion of 3690-ac lse, sec 7, lge 4, lcn 8500-ft test.

Jackson County: Forest Development Co.'s Bennett 1, 467 ft fr ne&sel's lot 36, 1st subdvn of J. M. Bennett Rch, Ramon Musquez gr, Valentin Garcia gr, 93-ac tr, 2 mi w Vanderbilt, lcn 6300-ft test.

SOUTHWEST TEXAS

Duval County: Wynn Crosby Drilling Co.'s Garcia 1, East Fitzsimmons area, 1320 ft fr wl & 1980 ft fr nl of AB&M 407, lcn 5000-ft test.

Live Oak County: Hickok & Reynolds' Alamo Lumber 1, Fant City area, 660 ft fr wl & on line between lots 235 & 236, Live-Bee subdvn 4, Alcantora sur, A-997, lcn 3000-ft test.

Starr County: Baldridge & King's Edgerton 1, 8 mi ne Rio Grande City, 210-ac lse in share 66, porcion 80, J. A. de la Garza Falcon sur, lcn 4500-ft test.

Starr County: Kirby and John G. Mayo's Elizondo 1, 660 ft fr s&el's of BS&F 75, 3 mi nw Rincon field, lcn 6000-ft test.

SOUTH CENTRAL TEXAS

Medina County: Caltex Oil Co.'s Rothe 1, 8 mi ne D'Hanis, 1950-ac lse, Medina County School Land 1012, lcn 3620-ft test.

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Squeaks from the Bull Wheel

Well Satisfied

"'Erbert, you really shouldn't have kissed me like that, with all those people so close around us, even if it was in the dark."

"I didn't kiss you. I only wish I knew who it was—I'd teach him."

"'Erbert, you couldn't teach 'im nothing."

Hear, Hear!

"I hear the police have orders to stop petting in the public parks."

"How long have the police been petting in the public parks?"

Just a Little Leeway

Now, madam, I take it that you favor a straight-life policy?

Don't make it too binding; I like to step out once in a while.

Not So Romantic

"So you met your wife at a dance; wasn't that romantic?"

"No; embarrassing. I thought she was home, taking care of the kids."

Moron Story

A dimwit bought one of those mail order houses that come in sections, and put it up himself.

"Howyuh doin'?" a friend asked shortly thereafter.

"Aw," mourned the moron, "I got troubles. Come on out and I'll show you."

"Well, for gosh sakes, Bill," exclaimed the friend, when he looked the place over, "you've put it together upside down."

"Darned if I ain't," replied the moron. "You know—I bet that's why I keep falling off the porch."

Escape

Corporal—Do you see that old buzzard over there? He's the meanest officer I ever saw.

Girl—Do you know who I am. I'm that officer's daughter.

Corporal—Do you know who I am?

Girl—No.

Corporal—Thank God.

War Rations

Those sausages you sent me yesterday seem to be meat at one end and bread crumbs at the other.

You're right, they were, madam. In these times it's hard to make both ends meat.

New Twist

May I speak to the lady of the house, please?

There ain't no lady of the house any more, she's a lieutenant.

Cured

"The Smiths seem to be getting along better these days."

"Yes, he visited his old home town last month and saw the girl he was in Love with twenty years ago."

Distinction

Do you hyphenate headache?

Not unless it's a splitting headache.

Notes for the Equipment Buyer and User

California Nomads Hear Talk on Japan

"Japan's Government of Her Colonies" was the subject of a talk made by R. J. Purdy, before the March 10 meeting of the Los Angeles Chapter of Nomads. Purdy has spent much time in Japan, Manchukuo, Korea and the occupied portion of China, making studies of how these countries were treated by the Japanese. He compared the peoples of Japan and China and told how the military clique had come to rule the government of Japan.

Included among guests at the meeting were: Ray L. Dudley, Regent of the Houston Chapter, who spoke a few words; Phillipi Gordon of Kern Trinidad Oilfields, Ltd.; Charles Bridgewood and C. H. Harrison of U.B.O.T., Trinidad, and Sherman L. Pease, formerly with Shell interests in Trinidad and later in Roumania.

New Tulsa Instrument Manufacturing Plant Operating

Manning, Maxwell & Moore, Inc., has established a new plant at Tulsa, Oklahoma, to manufacture oil relief valves. The plant is now in operation.

Other plants are operated by this company in Bridgeport, Connecticut; Boston, Massachusetts; and Muskegon, Michigan.

Socony-Paint Products Receives Merit Awards

Socony Paint Products, a division of the Socony-Vacuum Oil Company, and the men and women of its Long Island City plant, have received the Maritime "M" Award, the Victory Fleet Flag, and the Maritime Merit Burgee, for production excellence and special achievement in the war program. The ceremonies were held at the plant.

Emsco Advances Kinder And Lamkin to Vice President

Emsco Derrick & Equipment Company announces appointment of W. C. Kinder and C. L. Lamkin as vice presidents.

Kinder entered the Emsco organization in June, 1939, as California manager of sales of the D & B Division. In January, 1941, he became assistant to the president and on March 1, 1943, was promoted to vice president.

Lamkin entered Emsco's employ in April, 1928, in the sales department. On January 1, 1940, he was transferred to Texas as manager of Emsco's Houston plant. On March 1, 1943, he became a vice president of the company.

W. C. Kinder

C. L. Lamkin

Keuffel & Esser Get Fourth "E" Award

Keuffel & Esser Company has received its fourth "E" Award from the Army-Navy production board, for meritorious service in the production of war supplies.

Lighting

Benjamin Electric Manufacturing Company, Des Plaines, Illinois, announces a new booklet, "Benjamin Specifications for Productive Lighting in War Plants."

The booklet includes suggested practical solutions to 21 lighting problems selected from those most frequently submitted to the engineering department of Benjamin Electric Company. These problems concern the effect of the right kind of lighting upon the nerves and physical energy of workers, the amount of lighting which is necessary for the best production, and methods of securing the best results from present lighting systems.

V-Belts

A plant to save 250,000 pounds of crude rubber annually is discussed in the current issue of "Texrope Topics," a publication of Allis-Chalmers, Milwaukee.

The program calls for "Wartime Drives" using shorter center distances and larger sheaves on all new V-belt applications made in 1943.

Sweeping Compound

LACEY-WEBBER COMPANY

Lacey-Webber Company, Kalamazoo, Michigan, has announced a new floor cleaning compound to eliminate the danger of fire usually inherent in materials for this purpose.

Fibre-Tex is the name of the product, said not to burn even when the flame of a blowtorch is played directly upon it nor as the result of spontaneous combustion.

It is also claimed for Fibre-Tex that it is highly absorbent of oils and grease and has an active cleaning effect upon floors on which it is consistently applied. Grease and oil-caked dirt are said to be removed; safety stripes and other floor markings made plainer and, in general, plant housekeeping greatly improved.

Motor Controls

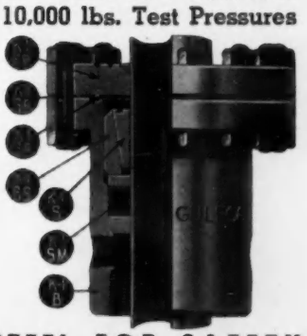
General Electric Company, Schenectady, New York, has published a new simplified guide to the selection and application of commonly used motor controls. The guide lists standard controls and describes their operation, discusses when to use magnetic and manual control, and explains when reduced-voltage starting is necessary. Motors and their controls go together like "ham and eggs," and one cannot be considered without the other. A motor is limited in what it can accomplish. It furnishes torque at the shaft and can run in both directions. The control is that part of the drive that makes the motor do what is desired, and this new guide is a complete "know-how and why" of control equipment.

GULFCO *Carefulness in Manufacture*
MAKES FOR PERFECT FIT AND INTERCHANGEABILITY
. . . . . saving time on the lease

GULFCO FORGED STEEL CASING HEADS
TYPE K-1—2000; 4000; 6000; 10,000 lbs. Test Pressures

An A.P.I. Flanged Casing Head with combined slips and double welded suspensions with auxiliary Neoprene packer. The weight of casing on slips compresses packing. Welding of flange to casing and seat ring forms double seat to prevent leaks. Full Hole opening.

Hold-down screws can be furnished if desired.



SEE GULFCO 20 PAGE SECTION COMPOSITE CATALOG

GULFCO FORGED STEEL FOR SAFETY

GULF COAST MACHINE & SUPPLY COMPANY
24 Years Manufacturing Forged Steel Fittings
BEAUMONT, TEXAS

Men in the Industry's News

R. G. HAMILTON, Schlumberger Well Surveying Corporation, Tulsa, has been nominated chairman of the Mid-Continent Section of the American Institute of Mining and Metallurgical Engineers, with election scheduled for March 25. Stanley W. Wilcox, Seismograph Service Corporation, and L. E. Elkins, Stanolind Oil & Gas Company, have been nominated vice chairmen, and W. L. Kendall, First National Bank and Trust Company, Tulsa, secretary-treasurer. Nominees for the executive committee include H. M. Cooley, Bethlehem Steel Company; C. C. Ross, Gulf Oil Corporation; G. H. Laughbaum, Sinclair Prairie Oil Company; W. B. Berwald, Ohio Oil Company, and C. E. Beecher, Cities Service Oil Company.

JOHN E. MABEE has been appointed to the board of trustees of University of Tulsa to fill the vacancy created by the resignation of L. F. McCollum, who is moving from Tulsa to New York.

C. C. TOOMEY, president of Midco Oil Company, Tulsa, has been elected president Tulsa Chapter, American War Dads.

H. C. JEROME, The Carter Oil Company, Tulsa, has been traferred to Seminole as regional personnel manager.

PAUL L. McGEE, Humble Oil & Refining Company district petroleum engineer, has transferred from the Galveston Bay district to Conroe.

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"The Entirely Different Boiler and Engine Treatment"

Entirely at our risk for 30 60 or 90 Days

IT MUST

perform to your satisfaction or you owe us nothing. No money in advance—not even shipping charges. It removes and prevents boiler scale and corrosion.

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9 Rockefeller Plaza, New York City

DR. FREDERICK H. HARBISON, of the economics department of the University of Chicago, has been appointed labor counselor to PAW to advise and represent the agency on all labor relations and manpower matters affecting the industry. Administrator Harold L. Ickes explained that Harbison will "recommend the appropriate policies and programs for determining and meeting the manpower requirements and to integrate them with our wartime programs for production, transportation, refining and distribution of oil."

H. S. CONDER of Trinidad Leaseholds, Limited, and P. Bayle of Schlumberger Well Surveying Corporation, both of whom have recently come from South America, were guests of Houston Nomads on March 26 at luncheon.

PAUL M. BUTTERMORE of Lansing, Mich., consulting geologist, leaves April 1 to join the PAW staff as analyst in the production division.

Buttermore has been in Michigan since 1935 when he was transferred here by the Chartiers Oil Company. He left Chartiers Januay 1, 1940, and since that time has been operating independently as consulting geologist and in wildcat oil development.

He was born near Pittsburgh, Pa., and graduated from the University of Pittsburgh's petroleum engineering school. He spent 10 years in the Southwest with Transcontinental Oil Company, Chartiers and as independent before coming to Michigan. He is a member of the AAPG.

JOHN L. SINCLAIR, Humble Oil & Refining Company district chief clerk, has been transferred from Arcadia to Wieland district.

MEYER DUBROW has recently been appointed division engineer for Continental Oil Company, with headquarters in Fort Worth. He was formerly district engineer at Forsan, Texas. He is a graduate of New Mexico School of Mines, and has been with Continental Oil Company several years.

S. ROSS CARR is now associated with Adams & Bradley, oil operators, with offices in Midland, Texas. He was formerly deputy supervisor for the Texas Railroad Commission at Midland.

A. M. BIRNIE, Gulf Coast manager for Universal Engineering Company for the past three years, has resigned and moved to California. He will be replaced by John Hoyt former Lake Charles branch manager.

LOUIS F. BONNER, Humble Oil & Refining Company district petroleum engineer, has been transferred from Goose Creek to the Galveston Bay district.

MAX W. BABB, chairman of the board of Allis-Chalmers Manufacturing Company, died in Milwaukee, March 13. He had been board chairman since 1942, and president for ten years prior to that. He joined the organization in 1904. He was educated in Iowa and Michigan, having graduated from the University of Michigan with an LLB Degree.

WILLIAM LOREN BATT has been awarded the Bok Award, a medal and a $10,000 check, for services in leading industrial mobilization for the war as vice chairman of the War Production Board, and also for having performed the most distinguished service for the city of Philadelphia during 1942. Batt is president of S.K.F. Industries.

Since graduating from Purdue University in 1907, he has been the recipient of many outstanding honors: Purdue awarded him the degree of Doctor of Engineering in 1933; Stevens Institute of Technology conferred on him an honorary degree of Doctor of Engineering; Drexel Institute of Technology awarded him the honorary degree of Doctor of Science, and the University of Pennsylvania conferred the honorary degree of Doctor of Science.

International fame came to him in 1926 when King Gustav of Sweden conferred upon him the Order of Vasa, and in 1933, the Order of the North Star, for cementing American-Swedish relations. In September, 1941, President Roosevelt appointed him as a special member of the American Mission to the British-American Soviet Conference in Moscow.

He holds the presidency of the International Committee of Scientific Management and is past president of the American Society of Mechanical Engineering. In addition, he is chairman of the board of the American Management Association, and past chairman of the Business Advisory Council for the Department of Commerce.

J. E. McFATE has been appointed manager of tubular sales for Republic Supply Company, with headquarters in Houston.

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